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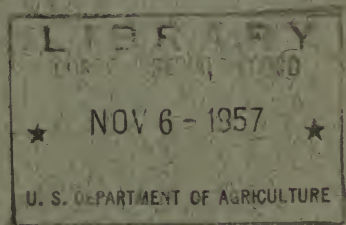
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Operating Costs of 15 Cooperative Poultry Dressing Plants

by Ralph A. Eastwood
and John J. Scanlan



Farmer Cooperative Service
U. S. DEPARTMENT OF AGRICULTURE
Washington, D. C.

FCS Bulletin 4 April 1954
(Formerly FCA Bulletin 70)

The Farmer Cooperative Service conducts research studies and service activities of assistance to farmers in connection with cooperatives engaged in marketing farm products, purchasing farm supplies, and supplying business services. The work of the Service relates to problems of management, organization, policies, merchandising, quality, costs, efficiency, financing, and membership.

The Service publishes the results of the studies; confers and advises with officials of farmers' cooperatives; and works with educational agencies, cooperatives, and others in the dissemination of information related to cooperative principles and practices.

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Administrator
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Operating Costs of 15 Cooperative Poultry Dressing Plants

by **Ralph A. Eastwood**

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and **John J. Scanlan**

Principal Agricultural Economist

**A Study Conducted With Funds Provided by the
Agricultural Marketing Act of 1946 (RMA Title II)**

Farmer Cooperative Service

U. S. DEPARTMENT OF AGRICULTURE

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SUMMARY

THE three primary objectives of this study of 15 cooperative poultry dressing plants were: (1) To obtain cost data, (2) to determine and measure the factors affecting costs and causing cost variations among plants, and (3) to discover the most feasible means of increasing efficiency and of reducing costs.

This report covers the first objective only of the study, the procurement and presentation of cost data. It makes available cost and some related data on a comparative basis for the information and guidance of those now engaged in poultry dressing operations and for those who are interested in entering this field. The data may serve as yardsticks or bench-marks for the purposes of making comparisons and of attempting to lower plant costs which are apparently too high.

The plants studied were located in eight eastern States. During the period of study, May 1947–May 1948, they handled more than 60 million pounds of chickens and turkeys, live weight basis. All except two plants were located in or near intensive broiler production areas. Only about one-third of the plants were exclusively broiler plants since the others dressed turkeys and mixed types of chickens also.

The total cost—direct, indirect plant, and overhead—of New York dressing chickens ranged from 5.8 to 11.8 cents per pound, with a 10-plant average of 9.0 cents. This constituted an average of 21.9 percent of the total cost of the New York dressed chickens, the live price of which averaged 31.9 cents a pound at the farm. There existed some relationship between size of plant and total per unit dressing cost. The largest plants tended to have the lowest dressing cost and the smallest plants the highest. This was not consistent among individual plants, due apparently to other factors which were more important than size in determining cost.

The New York dressing costs of chickens, including both direct and indirect plant cost but not including selling and other non-plant costs, averaged 7.62 cents a pound and constituted 85.18 percent of the total. The percentage ranged from 73.33 to 93.32 percent among 10 plants.

The non-plant costs, essentially selling and general and administrative, showed a wide range, 0.57 to 2.61 cents per pound of New York dressed chickens. The average was 1.36 cents. Both the lowest and highest per pound non-plant costs were found in the large-size plant group.

Aside from the cost of the raw material—live chickens—shrinkage constituted the largest single item of New York dressing cost. At 10 plants it averaged 2.74 cents a pound or 31.0 percent of the total. A wide variation—1.08 to 3.79 cents—existed among the plants in this item, depending largely on whether the chickens were fed at the plant.

The average shrinkage in hauling live broilers and mixed types of chickens to dressing plants was 2.8 percent for broilers and 3.2 percent for mixed chickens. On turkeys it ranged around 1.5 percent but was as high as 3.7 percent at one plant in October 1947.

The average feeding gain in weight at 5 plants for 47 plant-months was 5.1 percent, with a range by months from 1.8 to 11.6 percent. However, at three out of four plants where satisfactory data were available on the cost of the feeding gain, the cost was greater per pound of gain, live weight, than the average price paid for the poultry. The average price paid at four plants, essentially broiler dressing plants, was 31.6 cents per pound whereas the average cost of the feeding gain was 36.3 cents, or 4.7 cents more, indicating a financial loss by feeding unless offset by a quality improvement, more efficient plant operation, or other factors.

An analysis of the cost of feeding gains showed that an average of 48.9 percent was for feed, 33.3 percent for indirect and overhead costs, and 17.8 percent for direct labor and for other miscellaneous direct costs. The feed cost per pound of live weight gain was 17.6 cents.

The New York dressing shrinkage on broilers at six plants showed a variation between plants from 7.8 to 10.6 percent with an average of 9.3 percent. At six broiler plants where the birds were fed for weight gain the New York dressing percentage of the live farm weight was 92.7 percent. On turkeys the farm to New York dressed weight showed an average shrinkage of 8.8 percent and a range of 8.0 to 10.0 percent at four plants.

Labor constitutes the second most important cost in New York dressing of chickens. The cost of direct labor in New York dressing chickens showed a 10-plant average for the year of 2.4 cents per pound with a range between the plants of 1.7 to 4.1 cents. This was equal to 5.8 percent of the total cost of New York dressed chicken and to 26.9 percent of the cost of New York dressing.

Data were obtained to show the averages and ranges of the percentages of (1) total hours, (2) regular hours, and (3) overtime hours used in the direct labor jobs in the 15 plants. At 9 plants doing eviscerating, this operation took the largest average percentage of total time, 25.8 percent. Pinning was next with 17.8 percent at 15 plants. Hauling, feeding, and packing were the items which required the greatest amounts of overtime.

The cost of materials used in New York dressing, including those for hauling, feeding, dressing, cooling, and packing, averaged 2.1 cents per pound at 10 plants, and constituted 5.0 percent of the New York dressed cost and 22.7 percent of the New York dressing cost. Most material items showed considerable variation in prices among the plants.

The average cost of selling New York dressed chickens at 8 plants was one-third of a cent per pound. This did not include the cost of terminal selling through brokers or commission men.

Data obtained at two plants which dressed important volumes of turkeys showed total New York dressing costs, including shrinkage, of 7.3 and 7.8 cents per pound, New York dressed weight basis. Of this dressing cost,

shrinkage was the largest cost item, constituting 51 percent of the total. Direct labor constituted about a fourth of the dressing costs. The price paid for the turkeys constituted 82.8 percent of the total cost of the dressed turkey.

Comparable cost data on eviscerating were more difficult to obtain than on New York dressing. The average net chicken eviscerating cost at 7 plants in cents per pound, including shrinkage, was 17.2 cents, with a range from 11.8 to 24.1 cents. The shrinkage cost averaged 11.0 cents per pound and was the largest cost item, constituting an average of 19.4 percent of the cost of the eviscerated chicken and 63.7 percent of the cost of eviscerating. Direct labor cost averaged 2.7 cents a pound and ranged from 0.5 to 4.5 cents a pound.

The average evisceration shrinkage from New York dressed chickens was 22.2 percent with a 5-plant range from 20.3 to 25.1 percent. The eviscerated weight was 72.1 percent of the farm live weight. Limited data on turkey evisceration shrinkage gave an average of 16.0 percent.

The spread between the cost of New York dressed turkey and of eviscerated turkey at one plant was 14.0 cents a pound. Of the cost of eviscerated turkey, the cost of the New York dressed turkey constituted 76.8 percent and the cost of eviscerating constituted 23.2 percent. The most important eviscerating costs were shrinkage 63.1 percent and direct labor 22.1 percent. The eviscerated cost of turkeys was 66.3 percent higher than the farm live price.

The unweighted average cost of hauling 37.6 million pounds of live chickens and turkeys from farms to seven plants was 1.06 cents per pound, with a plant-by-plant range from 0.49 to 2.69 cents.

Although no attempt was made to analyze the cost data obtained for this report to determine and to measure the factors which affect costs, three important cost factors which became apparent during the study are: (1) Overgrading live poultry when purchased, (2) the labor situation, and (3) the degree of plant utilization.

The wide ranges in most of the costs of the plants studied indicate the need for and the possibilities of increased efficiency and cost reduction in the processing of poultry—particularly with regard to labor. There is need for further study to determine (1) how various factors affect costs and (2) specific ways of reducing costs. Present findings indicate that more desirable buildings, better plant layout, more and improved machinery and equipment, progressive labor training and incentive policies, and scheduled production programs might reduce costs substantially.

Operating Costs of 15 Cooperative Poultry Dressing Plants

DRESSING or processing poultry is an important step in its movement from producer to consumer. This step is important for a number of reasons, one of the chief being the cost. Any information which will help in reducing dressing costs can be of considerable value to producers, processors, and consumers.

The study on which this report was based was conducted with funds made available under Title II of the Agricultural Marketing Act of 1946 for the primary purpose of determining and making available information on costs of processing poultry so that processing might become more efficient and thereby reduce the price spread of poultry between producers and consumers.

Many requests have been received from producers, cooperative and non-cooperative marketing organizations, educational institutions

and State and Federal agencies for information on various phases of poultry dressing, particularly on the costs of dressing chickens and turkeys. Little such information is available, on large-scale poultry dressing plants. The information available is on costs in individual plants. No major or intensive studies have been made of a comparative cost-analysis nature of a number of such plants.

Originally this study was planned to cover both processing costs and plant layout and equipment of cooperative poultry plants. It was felt that cost data, coupled with and related to detailed information on plant design and operations, might be of considerable value to the industry. While it was not possible earlier to carry out the cost part of the study, the phase covering the layout, equipment, and operations of 13 farmers' cooperative plants in

NOTE: The authors express their appreciation to the officials and employees of the cooperatives whose plants were included in this study for their splendid cooperation and willing assistance, and to the following members of the Cooperative Research and Service Division (now Farmer Cooperative Service): George E. Hodsdon, Jr., for assistance with the field work and tabulation; Joan Wittbrodt and Ruth Christie of the statistical section for calculating and tabulating the statistical data; and Colene A. Schmitt, Alice L. Hubbard, and Thomas Topich for assistance in preparing the report.

7 States was made in 1945 and a report issued.¹ A complementary study was made in 1948 of the plans and operations of 48 farm and small commercial dressing plants in 10 States of the Atlantic and East North Central regions.²

It was the original purpose of this, the later cost phase of the study, not only to determine and to make available cost data but also to analyze these data to find and to measure the factors which affect costs in order that steps might be taken to reduce them.³

The information in this publication is designed to enable present poultry processors to compare their operations with those of the plants studied. Groups contemplating the establishment of new plants or the assumption of ownership and management of existing plants will obtain from the study information regarding (1) the types of plants used by others and (2) the costs and variations in costs among 15 large plants. The study is designed to furnish information relating to some of the primary requisites for the efficient operation of plants in a highly competitive field.

Study Procedure

Twelve producer cooperatives operating 15 large poultry dressing plants participated in the study.

¹ Hurst, W. M., *Layout and Operations of Cooperative Poultry Dressing Plants*. U. S. Farm Credit Admin., Misc. Rpt. 101, 56 pp. 1946.

² Amacker, George A., and Scanlan, John J., *Plant and Operations of Farm and Small Commercial Poultry Dressing Plants*, U. S. Farm Credit Admin., Misc. Rpt. 147, 53 pp. 1951.

³ Ralph A. Eastwood was employed on a temporary basis by Farm Credit Administration as an agricultural economist from April 1948 to March 1950 to head up this study. This report was completed and revised after his departure.

The management made all the needed records of the plants available. Information and data were generously given with the understanding that the cost data would not be identified with the plants or associations other than by code letter or number.

Each of the plants was visited, and information and data obtained from the records, from association personnel, and from observing operations. The data were obtained on as comparable a basis as possible and covered a period of 1 year, from May 1947 to May 1948. The information thus obtained was supplemented by information from the Department of Agriculture, Department of Commerce, State colleges, and other sources.

Number of Plants

The 15 plants selected and studied included all except 7 of the large cooperative poultry dressing plants operating at the time east of the Mississippi River and about one-fifth of all the large dressing plants operated by cooperatives in the United States. All plants studied were cooperatively operated, were located east of the Mississippi River, and constituted 2.7 percent of the 557 wholesale poultry dressing plants listed by the Department of Commerce for 1947.⁴

The 15 plants included in this study were operated by 12 cooperatives—4 of the plants being operated by one association. Also, three of the plants belonged to cooperative broiler processing and

⁴ *Census of Manufacturers 1947*, U. S. Department of Commerce, Bureau of the Census, Series, May 27, 1949.

marketing associations which were members of a cooperative broiler sales association. At eight of the dressing plants, poultry dressing and marketing were the only services performed. Of the other seven dressing plants, four handled and marketed eggs and three handled farm supplies.

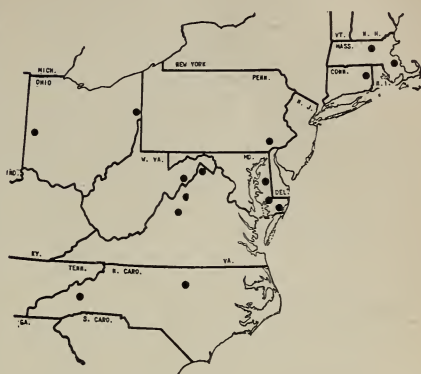
In 1948, the 12 cooperatives had 45,000 patrons and marketed live and dressed poultry amounting to \$23½ million. Sales included 1,949,800 pounds of live chickens and turkeys; 37,800,000 pounds of New York dressed chickens; 3,000,000 pounds of New York dressed turkeys; 14,400,000 pounds of eviscerated (ready-to-cook) chickens and turkeys; and 10,000 pounds of rabbits and miscellaneous poultry.

Location of Plants

The 15 cooperative plants were located in eight eastern States (fig. 1). Three were in Virginia, three in Maryland, two each in Massachusetts, North Carolina, and Ohio, and one each in Connecticut, Pennsylvania, and West Virginia.

Intensive broiler production was characteristic of each area where the

Figure 1.—Location of 15 poultry dressing plants studied.



plants were located except in two plants in Ohio. However, since turkeys and mixed and mature chickens were important at 9 plants, these plants were not considered as strictly broiler plants in this study. There is a heavy concentration of fowl along the eastern seaboard from southern Pennsylvania to southern Maine. Four of the plants in this study are in this area. Only one area of intensive turkey production, the Shenandoah Valley of Virginia, supplied plants covered in this study.

Description of Plants

Original Use

TEN of the plants were originally built for dressing poultry. Two of the others had been used many years as warehouses for storing bulky commodities. Another building had been a small factory but was converted to a dressing plant by adding a feeding station and a picking room. Another had first

been a barn for carriage horses and later was used to store feed and farm supplies before converting to a dressing plant.

Type of Building

A previous report described the layout of several of the plants.⁵ The

⁵ Hurst, W. M. *Layout and Operations of Cooperative Poultry Dressing Plants*. U. S. Farm Credit Admin. Misc. Rpt. 101, 56 pp.

Table 1.—Daily New York dressing capacities of 15 cooperative plants in pounds and number of birds

Size group of plants	Plant	Daily dressing capacity ¹	
		Pounds	Birds ²
I.—Large -----	A	50,000	14,286
	B	50,000	14,286
	C	36,000	10,286
	D	36,000	10,286
	E	34,000	9,714
Average -----		41,200	11,771
II.—Medium -----	F	17,500	5,000
	G	16,000	4,571
	H	14,000	4,000
	I	11,000	3,143
	J	10,000	2,857
Average -----		13,700	3,914
III.—Small -----	K	9,000	2,571
	L	9,000	2,571
	M	6,000	1,714
	N	3,500	1,000
	O	3,500	1,000
Average -----		6,200	1,771
15 plant total -----		305,500	87,286
15 plant average -----		20,367	5,819

¹ The weekly capacity is calculated at 5 times the daily capacity.

² Number of birds calculated from capacities in pounds divided by 3½ pounds, the estimated average live weight of all types dressed.

functional layouts of the plants were not generally considered efficient. They had not been well-planned or proportioned for lowest cost operation. Some were made of materials unnecessarily substantial and costly for buildings in such a rapidly changing industry. Six of the buildings were of frame construction, four of brick, three of cinder blocks, and two of cinder blocks and brick. None of the buildings were rat and vermin proof. All of the New York dressing and eviscerating rooms had cement floors but none were provided with non-slip surfacing and the floors of

the eviscerating rooms generally were dangerously slippery when wet and greasy. Feeding and receiving rooms in all except three plants had cement floors. Those three had part or all of such floors made of hardwood. This type of floor is not as sanitary as cement floors. Lighting was poor and the walls were extremely dirty in two plants where dressing was done in the basement. Another plant had a basement dressing operation well supplied with artificial light and ventilation although probably at higher cost than if the building had been of one-story construction de-

signed to use natural light and ventilation (figure 2).

Sites

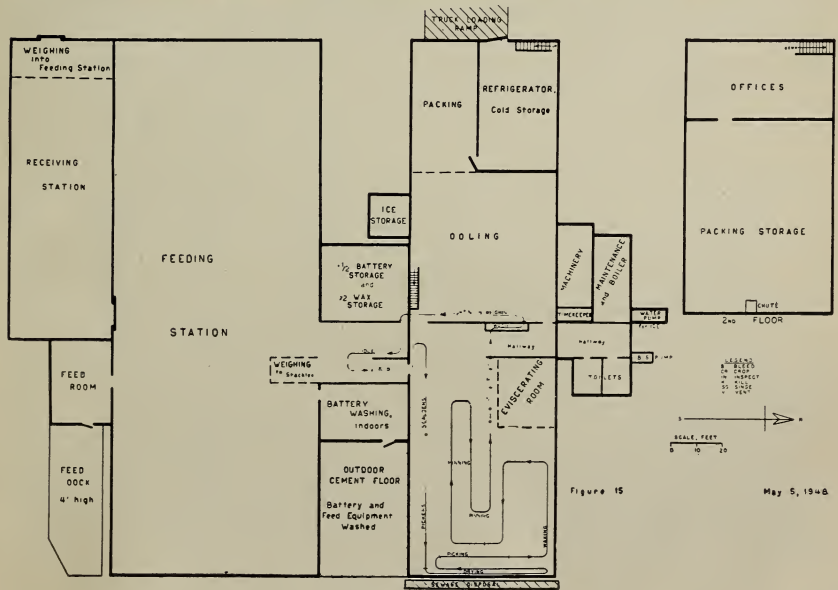
Eleven of the fifteen plants were located within the corporate limits of towns and cities. Seven of these were in residential areas. The four not in corporate limits were near enough to villages to make it convenient for employees. One of these four was located in the geographical center of the area served but several miles from the nearest village. Of the four in rural areas, three were within a few feet of streams so that water-borne plant sewage could be run directly into the streams. Two were located where unpleasant industrial odors created a personnel problem—one from a nearby city dump and the other from livestock and poultry viscera.

Plant Capacities

There are several methods of determining plant capacity. Among the methods considered in this study were—(1) actual annual production, (2) highest day's or week's output, (3) maximum sustainable production, (4) minimum sustainable production, (5) normal total man-hour output, and (6) manager estimate or preference.

The method decided upon was that of manager estimate or preference. A manager is in a splendid position to estimate the best sustainable output to give the highest net earnings. To do this, he must consider a number of factors including plant layout and size, type and amount of equipment, labor supply, available poultry supply, and managerial skills. The plant capacities are in terms of New York

Figure 2.—A well-planned floor layout for plant feeding and New York dressing with a daily capacity of 50,000 pounds.



dressing output. The eviscerating capacities were not included in the size rating for a number of reasons but chiefly because of complications arising from their inclusion.

Table 1 and figure 3 give the daily capacity of each plant based upon the capacity at which the manager felt it would function best. Plants A and B, rated at 50,000 pounds of New York dressed poultry a day, were the largest and plants N and O, with daily capacities of 3,500 pounds, were the smallest. The combined daily capacity of the 15 plants included in this study was 305,500 pounds, or 87,286 head of poultry based on an average live weight of 3½ pounds.

Size Grouping

In some of the tables in this report, to facilitate making comparisons based on sizes of plants, plants were placed in three size groups of

five plants each. The groupings are shown in table 1. Group I, large plants, consists of plants coded as A, B, C, D, and E, with daily capacities ranging from 34,000 to 50,000 pounds, form a group in which the smallest plant was almost twice as large as the largest plant in the next group. The other 10 plants, F to O, inclusive, were arbitrarily divided into two equal groups of 5 associations each.

In actual New York dressed output during the year of study, the outputs of the 15 plants followed the order of capacity shown in table 1 except the positions of one association placed in the medium group and one placed in the small group would have been reversed.

Floor Space

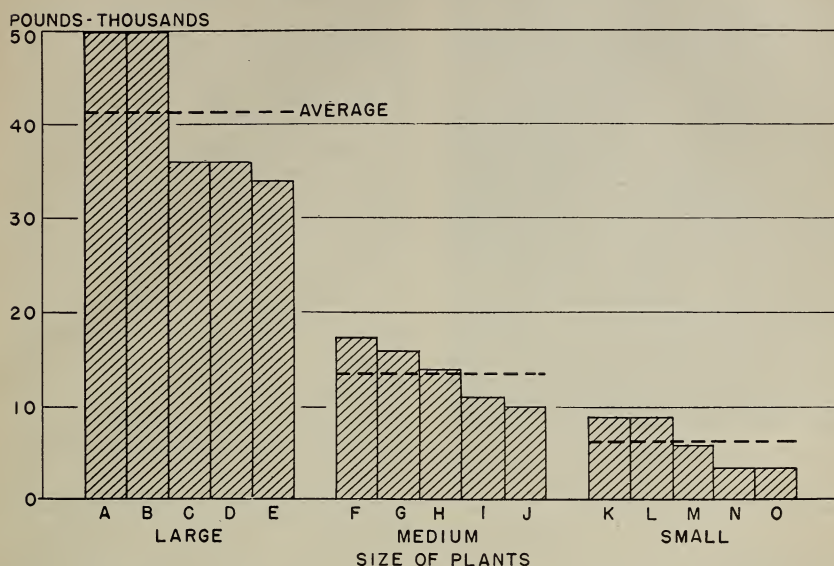
The 15 plants had an average of 19,824 square feet of floor space

Table 2.—Use of floor space, 15 cooperative poultry dressing plants, by operations, 1947–48

Use	Plants	Area ¹ (range)	Average area by groups ¹			
			I— Large	II— Medium	III— Small	All groups
Processing (plant):	<i>Number</i>	<i>Square feet</i>	<i>Square feet</i>	<i>Square feet</i>	<i>Square feet</i>	<i>Square feet</i>
Direct:						
Receiving	15	252– 3,861	2,180	1,537	1,249	1,655
Feeding	10	1,072–17,234	11,564	4,368	2,518	7,596
New York dressing	15	641–11,240	5,653	1,997	1,684	3,111
Cooling	12	225– 2,864	1,106	325	429	685
Packing (New York dressed)	9	408– 6,908	5,082	2,096	1,324	3,166
Eviscerating	9	986–15,421	6,005	3,460	1,544	3,882
Indirect (processing overhead)	10	21– 1,169	729	506	33	523
Total processing	15	3,514–48,869	28,586	10,463	5,602	14,884
Other (non-plant):						
Selling	13	176– 2,529	1,574	996	627	1,060
General and administrative (overhead)	15	904–20,928	7,190	2,794	1,814	3,933
Total other	15	1,156–24,607	9,064	3,986	2,581	5,210
Grand total	15	5,089–72,134	37,397	14,051	8,024	19,824

¹ Averages and ranges are only for the number of plants performing the specified functions. Averages are weighted.

Figure 3.—Daily New York dressing capacities of 15 cooperative poultry dressing plants in pounds, 1947–48.



with a range from 5,089 to 72,134 square feet. These figures include all floor space whether used for feeding, New York dressing, eviscerating, office, or other purposes.

A wide range of average floor space among plants of the same capacity grouping was found. This was due in a great measure to whether feeding and evisceration was done in a plant. Group I plants had floor space which averaged nearly 5 times that of group III plants (table 2).

The relationship of average total New York dressing floor space—total floor space less eviscerating space to average daily capacity of each group of five plants is shown in the following table.

This table indicates that an average of 0.86 square feet of floor

Group	Floor space	Daily capacity	Square feet floor space per pound of daily capacity
	<i>Square feet</i>	<i>Pounds</i>	<i>Square feet</i>
I—Large-----	31,392	41,200	0.76
II—Medium-----	10,591	13,700	.77
III—Small-----	6,480	6,200	1.05
Average--	16,154	20,367	1.86

¹ Unweighted average.

space was used for each pound of dressed capacity. It indicates also that less floor space was required per unit of output in large and medium plants than in small plants. The amount of floor space required to dress a specified volume of poultry might be calculated in this manner to determine proper plant size and approximate plant cost.

The area and portion of total floor space used for each processing

(plant) operation, for other plant purposes, such as supervision, and for non-plant purposes, such as selling and general administration, were determined at each plant (table 2).

Processing space, both direct and indirect, accounted for an average of 75 percent of the total space for the 15 plants, with a range from 65 to 85 percent. Indirect processing space requirements were small.

Of the non-plant uses, requiring an average of 5,210 square feet, 20 percent was for selling operations. Selling required an average of 1,060 square feet of floor space with a

range from 176 to 2,529 square feet. The 13-plant range in selling space was from 1 to 25 percent of the total floor space. The low percentages indicate considerable open-dock selling and the apparent duplicate use of floor space. Plants in group II required from 3 to 11 percent of the total floor space for selling. The 3-group average was 5 percent (table 2).

The percentage of floor space for administrative purposes decreased slightly with increased plant capacity. It averaged 22.6 percent for the small plant group, 19.9 percent for the medium and 19.2 percent for the large plant group.

Table 3.—Average length of conveyor dressing line, 15 cooperative poultry plants, by operations ¹

Operation	Plants	Range	Average for group			All groups
			Large I—	Medium II—	Small III—	
	<i>Number</i>	<i>Feet</i>	<i>Feet</i>	<i>Feet</i>	<i>Feet</i>	<i>Feet</i>
Hanging-----	15	12- 78	44	29	30	34
Killing and bleeding-----	15	12- 46	31	16	24	24
Scalding-----	15	8- 38	26	18	15	20
Picking-----	15	19- 90	57	58	24	46
Drying-----	3	11-116	70			70
Waxing-----	3	85-103	94			94
Pinning-----	15	8-223	172	85	69	108
Singeing-----	13	2- 14	5	5	3	4
Cropping-----	11	2- 12	7	3	4	5
Venting-----	11	2- 6	5	3	3	4
Washing-----	13	5- 15	11	6	6	8
Inspecting-----	5	2- 20	4	20	5	8
Sorting-----	6	8- 31	26	25	8	22
Weighing-----	9	7- 52	25	10	25	23
Cooling-----	1	0	78			78
Idle-----	14	5- 75	26	25	22	25
Total New York dressing-----	15	117-751	548	266	212	358
Eviscerating-----	5	31-658	345	122	50	197
Total plants, range, and average line length-----	15	117-1409	686	315	222	408

¹ Averages and ranges apply only to plants performing each operation. Column 2 shows the number of plants doing each job. The number of plants in each size group performing an operation varied from 0 to 5.

Conveyor Dressing Line

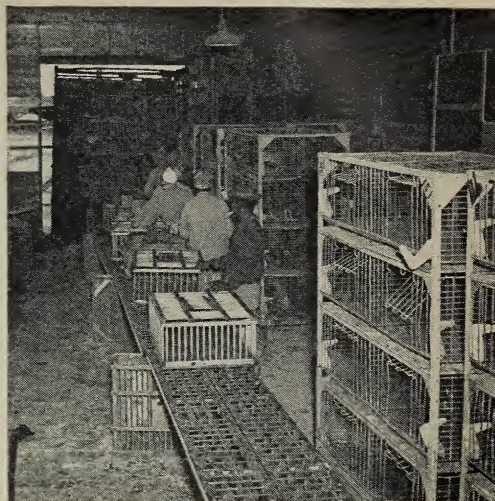
The length of overhead motor-driven chain conveyor line used in all plants varied with the quantity of poultry to be dressed, the speed of dressing, the shape of the floor-space available, and the proportion of evisceration to New York dressing. The conveyor line for New York dressing ranged from 117 to 751 feet and averaged 358 feet (table 3). The average length of the conveyor line of the five largest plants was more than two and one-half times that of the five smallest plants. The eviscerating line at 5 plants averaged 197 feet and ranged from 31 to 658 feet. The total length of the conveyor line for both dressing and eviscerating reached a maximum of 1,409 feet at one plant.

The common practice in three of the largest plants was to hang a chicken each $7\frac{1}{2}$ inches on the conveyor line. With generally similar lines, other plants hung one chicken each 15 or $22\frac{1}{2}$ inches. Two to four times more space was needed to dress a turkey.

The larger plants generally ran their lines at 2,400 to 3,600 feet per hour. These speeds equalled or exceeded the speeds for which the equipment was designed by the manufacturers. Operators in many cases had changed gear ratios to get increased line speed. This resulted in line capacities ranging from about 250 chickens per hour to as many as 5,500 per hour.

Length Line Used by Jobs

Hanging: The 15 plants used an average of 34 feet of chain for hanging the poultry, with a range from



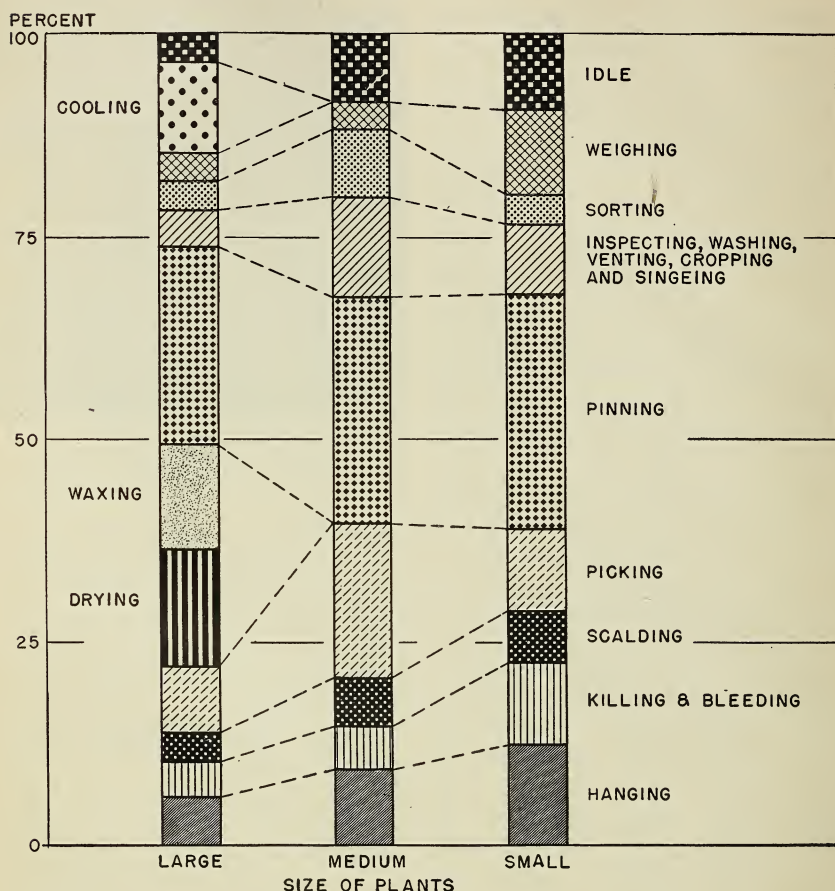
Live poultry is unloaded from the pick-up trucks and transferred to dressing plant batteries.

12 to 78 feet. There appeared to be no connection between the hanging space needed and whether the hanging was done from feeding batteries or directly from coops in which the poultry had been hauled from the farms.

Killing and Bleeding: Killing and bleeding required from 12 to 46 feet of line with an average of 24 feet to allow the killer enough room to stick the poultry as it passed him and to allow the killed poultry to relax and bleed before going into the automatic scalders.

Scalding: The length of line necessary to take the freshly killed chickens through the automatic semi-scald and to the first automatic picker varied from 8 to 38 feet. The scalders used ranged in length from 8 to 18 feet. At several plants longer scalders were needed to properly scald the volume of poultry dressed. The smaller plants especially needed longer scalders for full

Figure 4.—Average percentage of conveyor line length used for each New York dressing operation, by plant groups, 1947-48.



production. Either coal or oil was used at all plants for heating the scalding water.

Picking: Picking was done at all plants with from one to three automatic pickers and by non-automatic drum, buffing, picking, or stripping machines to remove the back, wing, leg, and neck feathers. One plant used a non-automatic finishing machine to remove feathers and pin feathers left by the automatic

machines. Quill, tail, and other large feathers missed by the machines were usually pulled by hand, although two plants used quill-pulling or wing-stripping machines. From 19 to 90 feet of line were required to take the poultry through the picking operation with an average requirement of 46 feet for the 15 plants.

Drying for Waxing: In the only plant using a mechanical dryer for

wet, freshly picked poultry to prepare it for waxing, 116 feet of line was used to take the poultry from the picking to the waxing operation. Two others moved the wet chickens 11 and 83 feet respectively to at least partially dry the birds before waxing.

Wax Picking: In the three plants that used wax, 85 to 103 feet of line were needed to carry the poultry through the wax dipping, cooling, breaking, and pulling operations.

Most managers were doubtful as to the advisability of wax-picking their poultry. They felt that the waxed poultry presented a better appearance, but they were not sure their customers would pay more for the added eye appeal, if, in fact, a better job was done with wax than without it. Some felt that waxing was most helpful to them when their plants were called upon to run either at or above normal capacity. Those not using waxing equipment generally were not anxious to install

it, preferring to be shown its merits in terms of lower dressing costs or of higher prices for wax-picked poultry.

Pinning: In New York dressing poultry, a larger percentage of the conveyor line was usually used for the pinning job than for any other job since as many as half of the workers employed in large New York dressing plant operations were pinners.⁶ The 15 plants studied used an average of 108 feet of line, with a range from 8 to 223 feet. The plant using only 8 feet of pinning line used a finishing machine. The average pinning line footage was equal to almost one-third of the total average length of the New York dressing line. At many plants the number of pinners used has been drastically reduced by the recent adoption of higher (medium or sub-scald) water temperatures and by

⁶ Hurst, W. M., *Layout and Operations of Cooperative Poultry Dressing Plants*. U. S. Farm Credit Admin. Misc. Rpt. 101. See p. 20.

In preparation for dressing, the live birds are hung on shackles suspended from a motor-driven conveyor line.



the use of more and up-to-date equipment. The length of the pinning line can be reduced almost proportionately. (Figure 4.)

Singeing: Singeing was an automatic process in all except two plants. One of those used a blow torch and the other did not singe the poultry. Singers ranged in complexity from a U-shaped piece of gas pipe with holes on the inside to complicated ones lighted automatically as the picked poultry passed. Bottled and natural gas were used as fuels. Singeing required from 2 to 14 feet of line. The plants that used automatic singers required 2 to 6 feet of line.

Cropping, Venting, and Washing: Cropping and venting the New York dressed birds were entirely hand-labor jobs. Cropping required from 2 to 12 feet of line, whereas venting required from 2 to 6 feet. Four plants did not crop or vent poultry to be drawn or eviscerated warm. One plant which sold New York dressed poultry did not crop or vent more than half of its output.

Until recently as many as half of the dressing plant employees were pinners who removed pin and other feathers remaining after mechanical picking.



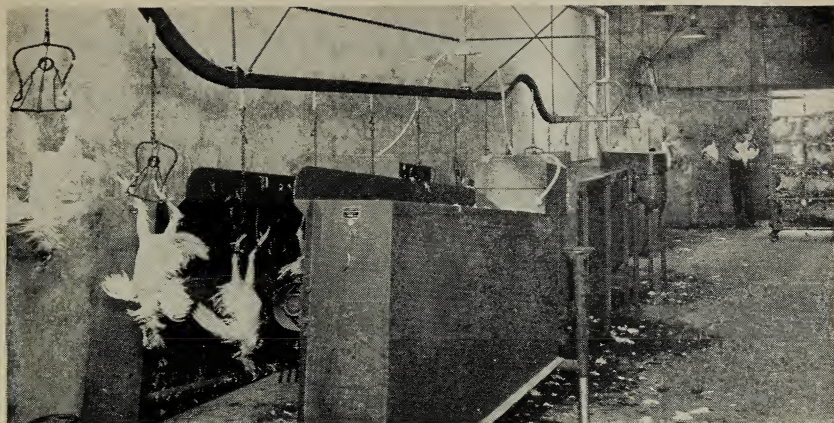
Washing was done automatically in water spray cabinets in 13 plants. The spray cabinets used from 5 to 15 feet of line. One plant did not wash poultry before putting it in the cooling vats and the other used a garden hose to rinse each drawn bird inside and out. Figure 4.

Inspecting, Sorting, Weighing, and Cooling: Inspecting, sorting, and weighing were done in one operation in smaller plants but separately in all large plants. Among five plants where inspection could be recognized as a separate job, from 2 to 20 feet of line were necessary. In the six plants where line-sorting was done, from 8 to 31 feet of line were used. Weighing from the line was common at nine plants and occupied from 7 to 52 feet.

Cooling could be best measured as a line allocation in only one plant where it required 78 feet of line to move chickens past the long concrete cooling vats for removal from the line.

Idle Line: All except one plant had some idle line after the poultry was taken off and before the starting point for hanging. It averaged 25 feet for the 14 plants and ranged from 5 to 75 feet. At the plant with only 5 feet of idle line the space was so short that at times live chickens were hung on idle shackles between birds that had been dressed but had not yet been taken off the line.

Eviscerating: Drawing or eviscerating on special eviscerating lines was done in two plants and on the New York dressing line in six plants. This operation required from 31 to 658 feet of line with a 5-plant average of 197 feet. Evisceration required, on an average, 55 percent as



After killing and bleeding, the birds are carried through a long tank of circulating hot water and then go through one or more mechanical pickers.

much line as New York dressing but for the smaller plants the percentages were less than for the larger plants—due largely to the small portion of the poultry being eviscerated in the smaller plants.

Book Value of Assets

A wide range was found in the book values of the assets of the 15 poultry dressing plants and of the three size groups based on the latest balance sheet statement available for each association for the period of the study (table 4).

Where a cooperative operated several plants or the poultry dressing operation was a department of a cooperative performing other services, it was necessary to make an allocation of assets in each instance on a reasonable basis. Eleven of the 15 plants required such an allocation since they were either branch plants or were operated in conjunction with other cooperative activities. Four of these 11 plants were branches of a centralized organiza-

tion; 3 were departments of purchasing-marketing cooperatives; and 4 were departments of egg-marketing cooperatives. The other 4 of the 15 were plants of specialized poultry cooperatives.

The total net book value of assets ranged among the 15 plants from \$25,400 to \$978,100 and averaged \$300,500. By size groups the average net book value of the assets was \$72,100 for the small plants, \$273,900 for the medium plants, and \$554,200 for the large plants. As an average of the gross book value of all assets, 52.8 percent were current assets, 40.5 percent fixed assets, and 6.7 percent other assets (table 5).

Current Assets

Current assets, making up more than half of the total gross assets, included cash and accounts receivable 33.5 percent, and inventories 19.3 percent (table 5).

The average amount of cash was \$48,100 but ranged up to \$254,000. The average was smaller and the

Table 4.—Book value of assets, 15 cooperative poultry dressing plants, by size groupings, 1947-48¹

Item	Groups ²						All plants
	I Large		II Medium		III Small		
	Average	Range	Average	Range	Average	Range	
<i>Current Assets</i>							
Cash.....	\$109,400	\$45,300—\$254,000	\$26,400	\$4,600—\$92,500	\$8,500	\$4,200—\$16,200	\$4,200—\$254,000
Accounts receivable.....	74,500	6,100—130,000	99,000	28,100—299,300	5,600	3,300—14,400	3,300—299,300
Inventories:							
Live Poultry.....	15,900	2,200—26,700	3,800	1,000—8,400	600	None	0—26,700
Dressed poultry.....	89,900	1,000—260,000	22,300	3,000—93,500	13,900	1,500—48,100	1,000—260,000
Feed.....	7,000	6,700—10,800	3,000	1,500—5,000	1,600	800—3,500	0—10,800
Packing supplies.....	27,200	3,300—111,200	3,000	None	300	300—500	800—111,200
Not otherwise identified.....	600	None	700	None	300	0—3,400	0—3,400
Total inventories.....	140,600	29,300—403,800	29,800	7,700—105,400	16,400	2,700—51,800	2,700—403,800
Total current assets.....	324,500	230,300—550,600	155,200	10,600—406,800	30,500	8,000—78,200	8,000—550,600
<i>Fixed Assets</i>							
Machinery, equipment, and furniture:							
Feeding station, machinery and equipment.....	19,400	8,000—36,200	4,000	800—10,000	600	None	0—36,200
Dressing equipment.....	30,600	18,000—58,000	24,100	7,500—39,700	10,600	5,400—22,000	5,400—58,000
Ice Plant, machinery and equipment.....	5,100	None	800	None	1,400	0—2,400	0—3,800
Coops.....	3,000	1,000—5,400	3,800	500—1,000	1,100	500—2,600	500—5,400
Trucks and automobiles.....	9,800	4,200—17,000	3,000	2,000—9,600	2,500	1,700—5,200	1,700—17,000
Office furniture, fixtures, and equipment.....	5,300	1,000—17,700	3,900	1,600—17,400	1,200	500—3,600	500—17,700
Lunchroom furniture, fixtures, and equipment.....	1,000	None	400	None	300	0—3,400	0—3,400
Not otherwise identified.....	4,100	None	None	None	1,500	0—3,400	0—3,400
Total machinery, equipment, and furniture.....	78,300	36,600—118,200	37,000	16,900—56,700	16,000	10,400—25,100	10,400—118,200
Land.....	7,400	2,600—10,100	6,600	1,000—12,300	3,700	2,400—11,800	1,000—12,300
Buildings.....	141,200	59,200—305,100	76,600	28,100—149,200	24,500	18,900—50,000	18,900—305,100
Land and buildings.....	148,600	63,200—315,200	83,200	36,000—161,500	28,200	21,300—51,700	21,300—315,200
Total fixed assets.....	226,900	108,100—433,500	120,200	53,600—218,200	44,200	10,400—68,700	10,400—433,500
<i>Other Assets</i>							
Investments.....	42,000	23,400—59,300	9,700	6,000—20,800	2,800	1,200—10,700	1,200—59,300
Deferred charges.....	5,900	2,200—14,500	3,000	1,000—10,800	600	500—1,200	500—14,500
Total other assets.....	47,900	25,500—66,800	12,700	9,000—22,200	3,400	500—11,400	500—66,800
Gross book value of assets.....	599,300	396,800—1,047,600	288,100	134,400—521,000	78,100	26,400—138,900	26,400—1,047,600
Less: allowance for depreciation on fixed assets.....	45,100	23,200—69,500	14,200	2,000—25,000	6,000	1,000—12,500	1,000—69,500
Net book value of assets.....	554,200	373,600—978,100	273,900	132,400—496,000	72,100	25,400—126,300	25,400—978,100

¹ To nearest \$100.

² 5 plants in each group.

³ Includes evisceration and cooling equipment.

⁴ Not included in range.

¹ To nearest \$100.² 5 plants in each group.³ Includes evisceration and cooling equipment.⁴ Not included in range.

Table 5.—Percentages specified groups of assets are of total gross book value of assets, 15 poultry dressing plants, by size groupings, 1947-48

Item	Groups			Total, 15 plants
	I—Large	II—Medium	III—Small	
Current assets:	<i>Percent</i>			<i>Percent</i>
Cash and accounts receivable.....	30.7	43.6	18.1	33.5
Inventories.....	23.4	10.3	20.9	19.3
Total current assets.....	54.1	53.9	39.0	52.8
Fixed assets:				
Machinery, furniture, and equip- ment.....	13.1	12.8	20.5	13.6
Land and buildings.....	24.8	28.9	36.1	26.9
Total fixed assets.....	37.9	41.7	56.6	40.5
Other assets.....	8.0	4.4	4.4	6.7
Total gross book value of assets.....	100.0	100.0	100.0	100.0

range narrower than for accounts receivable. The average amount of accounts receivable was \$59,700. This was \$11,600 more than the average amount of cash.

Live poultry inventories were important in only the five largest plants because most of the medium and small plants did little feeding at the plant. Dressed poultry was the largest inventory item at each of the plants. The average inventory value of dressed poultry for the 15 plants was \$42,000 ranging from \$1,000 to \$260,000 (table 4). Mid-month average inventories of both live and dressed chicken were larger than end-of-month inventories used in these averages because it was common for the management to shorten feeding time or reduce procurement to minimize inventories at the end of the month.

Feed inventories were important at several of the large plants. Among the plants in group I, the average feed inventory was \$7,000 and ranged from \$6,700 to \$10,800.

Packing supplies was the next largest item of inventory with an average investment in the large plants of \$27,200 and the maximum \$111,200.

Fixed Assets

Fixed assets made up 37.9 percent of total gross assets for the large plants, 41.7 percent for the medium plants, and 56.6 percent for the small plants, indicating a smaller part of the assets as fixed assets among the larger plants (table 5). In each size group machinery, equipment, and furniture was about one-third of the fixed assets and land and buildings the remainder.

Machinery, Equipment, and Furniture: Machinery, equipment, and furniture constituted 13.6 percent of the total gross assets for the 15 plants and land and buildings 26.9 percent. Dressing machinery and equipment was the most important single item in this category (table 4). The average investment in dressing machinery and equipment,

including that for eviscerating and cooling but excluding ice plant machinery and equipment, was \$21,400 with a range up to \$58,000. The investment in this item generally increased as the plants increased in size.

Feeding station equipment investment, chiefly in feeding batteries, was important. In the plants which regularly fed the poultry for weight gain the investment in feeding station equipment was about two-thirds of the amount of the investment in dressing equipment. The large plants had from \$8,000 to \$36,200 in this item.

Investment in office furniture and fixtures was up to \$17,700 in one large plant. In trucks and automobiles it was \$17,000 in one large-size plant.

Land: The investment in land was not large in relation to that of a number of other items. It ranged from a low of \$1,000 to a high of \$12,300.

Buildings: In all three size groups, buildings represented the biggest single asset—with the one exception of accounts receivable at one of the medium-sized plants. The five largest plants had average investments of \$141,200 in buildings. This was about twice the average investment in medium-sized plants, and six times the average building investment in small plants.

Other Assets

Other assets were either current short-term surplus money investments such as Government bonds, purchases of stock in other cooperatives, or prepaid insurance. They had an average total of \$21,300 and comprised 6.7 percent of the average gross book value of assets.

Depreciation and Reserves

Against the average gross book value of assets reserves were set up for depreciation, obsolescence, and other purposes averaging

Table 6.—Average amount of assets (in gross book value) per 1,000 pounds daily dressing capacity of 15 cooperative dressing plants, by plant groups, 1947-48¹

Item	I—Large	II—Medium	III—Small	Average ²
Current assets:				
Cash and accounts receivable.....	\$4, 463	\$9, 157	\$2, 275	\$5, 298
Inventories.....	3, 408	2, 176	2, 641	2, 742
Total current assets.....	7, 871	11, 333	4, 916	8, 040
Fixed assets:				
Machinery, equipment, and furniture.....	1, 897	2, 703	2, 576	2, 392
Land and buildings.....	3, 606	6, 074	4, 550	4, 743
Total fixed assets.....	5, 503	8, 777	7, 126	7, 135
Other assets (total).....	1, 162	922	543	876
Total gross book value of assets.....	14, 536	21, 032	12, 585	16, 051

¹ Based on New York dressing capacity.

² Average of the three group averages.



After pinning, the birds are singed to remove hair and fine feathers and cropped to remove feed remaining in the crop.

\$21,600. This was equal to 6.7 percent of total average gross book value of assets and 16.6 percent of total fixed assets.

Relation of Assets to Capacity

Assets averaged \$16,051 for each 1,000 pounds of daily New York dressing capacity in the 15 plants (table 6). The highest average was \$21,032 for medium-sized plants and the lowest \$12,585 for small-sized plants. Fixed assets averaged \$7,135 per 1,000-pound capacity and was smallest for the large plants.

Sources of Capital

The chief sources of capital were members, banks for cooperatives, and local banks. In the 12 associations operating the 15 dressing plants, the members' equities equalled 52.5 percent of total liabilities and net worth (table 7). Among the associations, the member equity percentages ranged from less than

zero to 82 percent. Capital stock (or other formalized capital shares) constituted 35.9 percent and capital reserves 16.6 percent of total liabilities and net worth.

In table 7, the 15 plants were divided into three groups, not by size, but by type of operation. On this basis of division, there were eight poultry dressing plants, four egg and poultry marketing plants, and three combination supply purchasing and farm product marketing plants. The equities of the producers were smallest, 15.3 percent, in relation to total liabilities and ownership equities in the poultry dressing plants (table 7). This relatively small average amount and percentage was due in part to operating losses of several associations.

In the egg and poultry and in the purchasing-marketing associations, the producers owned over half the total liabilities and net worth. The figures given in table 7 include the

Table 7.—Average amount of capital stock (or other formalized capital shares), capital reserves, and liabilities and net worth of 15 poultry dressing plants, by type of operation, 1947-48¹

Type of operation	Number of plants	Amount of—				Percent ownership equities of total
		Capital shares	Capital reserves	Total ownership of equities	Total liabilities and ownership equities	
Poultry dressing	8	\$71,400	² —\$14,000	\$53,000	\$346,400	15.3
Egg and poultry	4	81,800	73,800	155,600	291,000	53.5
Purchasing-marketing ..	3	616,400	296,600	913,000	1,503,700	60.7
Average 15 plants	15	256,500	118,800	373,900	713,700	52.5
Percentage of total		35.9	16.6	52.5	100.0	

¹ As of last balance sheets available for 1947-48 period.

² Deficit.

totals in the over-all operations and not just the poultry operations. The producers' equities in the older associations, and especially in the integrated types of associations,

were higher than in the specialized poultry associations.

The specialized poultry associations were newer and had less opportunity to accumulate savings or to

Table 8.—Cost of New York dressed chickens in

Cost item	Group and plant					
	I—Large					
	Plant A	Plant B	Plant C	Plant D	Plant E	Average ¹
	Cents per pound					
Plant costs:						
Direct:						
Raw material: Live chickens	32.072	30.516	31.294	33.795	32.503	32.036
Dressing:						
Shrinkage	3.254	1.075	3.084	1.153	3.386	2.390
Labor	2.299	1.842	1.866	2.060	2.364	2.086
Materials:						
Hauling .....	.499	.306	.484	.939	.357	.517
Feeding .....	.547	1.347	.689	1.159	.912	.931
Dressing .....	.031	.160	.067	.177		.087
Cooling and packing .....	.345	.767	.847	1.155	.461	.715
Total direct cost	39.047	36.013	38.331	40.438	39.983	38.762
Indirect (overhead) .....	.715	.335	.213	.529	.502	.459
Total plant cost	39.762	36.348	38.544	40.967	40.485	39.221
Nonplant costs:						
Selling .....		.449	.756	1.357	.021	.517
General and administrative (overhead) ..	.841	.981	.801	1.252	.550	.885
Total nonplant cost .....	.841	1.430	1.557	2.609	.571	1.402
Grand total cost	40.603	37.778	40.101	43.576	41.056	40.623
Grand total cost exclusive of raw material ..	8.531	7.262	8.807	9.781	8.553	8.587

¹ Dressed weight basis. Where no figure is given for a plant either it did not incur a cost for the item

absorb early losses. In these associations the chief source of producer capital was from the sale of capital stock. The capital stock of the broiler associations was bought by the producers on the basis of \$50 to

\$100 for each 1,000-bird house capacity. This meant that each producer had an original investment in the association in direct proportion to the use he intended to make of it.

New York Dressing Cost: Chickens

THE principal objective of the first phase of the study was to determine the costs of dressing poultry in 15 cooperative dressing plants for a 12-month period, extending in most instances from May 1947 to May 1948. Dressing costs chiefly determine, over other than short periods, the price spread between live and dressed poultry at the wholesale level. Beyond this, the relative costs of dressing poultry may deter-

mine the ability of individual poultry processors to operate in competition with other poultry processors or in competition with buyers who sell live poultry to the wholesale and retail trade.

The individual and over-all costs of New York dressing chicken operations of the plants studied were analyzed and are summarized in this chapter. Many difficulties were encountered in making the

*cents per pound, at 10 dressing plants, 1947-48*¹

Group and plant—Continued

II—Medium				III—Small			10 plants		
Plant F	Plant H	Plant J	Average ²	Plant L	Plant N	Average ²	Average ²	Range	Amount of range
Cents per pound				Cents per pound			Cents per pound		
30.660	34.351	30.877	31.963	31.327	31.164	31.245	31.856	30.516-34.351	3.835
3.788	2.886	2.662	3.112	3.475	2.601	3.038	2.736	1.075-3.788	2.713
1.988	2.536	1.730	2.085	3.191	4.073	3.632	2.395	1.730-4.073	2.343
2.168	1.620	-----	1.263	.480	.177	.329	.703	----- 2.168	2.168
.585	.173	.123	.293	.610	-----	.305	.615	----- 1.347	1.347
-----	.080	-----	.027	-----	-----	-----	.052	----- .177	.177
.760	.631	.428	.606	.561	.984	.773	.693	.345-1.155	.810
39.949	42.277	35.820	39.349	39.644	38.999	39.322	39.050	35.820-42.277	6.457
.717	.197	.171	.362	.572	.295	.433	.425	.171-.717	.546
40.666	42.474	35.991	39.711	40.216	39.294	39.755	39.475	35.991-42.274	6.283
.284	.002	-----	.095	.131	.429	.280	.343	----- 1.357	1.357
1.498	.673	.719	.963	.725	2.092	1.409	1.013	.550-2.092	1.542
1.782	.675	.719	1.058	.856	2.521	1.689	1.356	.571-2.609	2.038
42.448	43.149	36.710	40.769	41.072	41.815	41.444	40.831	36.710-43.576	6.866
11.788	8.798	5.833	8.806	9.745	10.651	10.199	8.975	5.833-11.788	5.955

or data were not available. ² Average for all plants listed here whether or not a figure is given in this table.

Table 9.—Cost of New York dressed chickens in

Cost item	Group and plant					
	I—Large					
	Plant A	Plant B	Plant C	Plant D	Plant E	Average ¹
	Percent					
Plant costs:						
Direct:						
Raw material: Live chickens	78.989	80.777	78.038	77.554	79.168	78.905
Dressing:						
Shrinkage	8.014	2.846	7.691	2.646	8.247	5.889
Labor	5.662	4.876	4.653	4.727	5.758	5.135
Materials:						
Hauling	1.229	.810	1.207	2.155	.870	1.254
Feeding	1.348	3.566	1.718	2.660	2.221	2.303
Dressing	.076	.423	.167	.406	-----	.214
Cooling and packing	.850	2.030	2.113	2.651	1.123	1.753
Total direct cost	96.168	95.328	95.587	92.799	97.387	95.453
Indirect (overhead)	1.761	.887	.531	1.214	1.222	1.123
Total plant cost	97.929	96.215	96.118	94.013	98.609	96.576
Nonplant costs:						
Selling		1.188	1.885	3.114	.051	1.248
General and administrative (overhead)	2.071	2.597	1.997	2.873	1.340	2.176
Total nonplant cost	2.071	3.785	3.882	5.987	1.391	3.424
Grand total cost	100.000	100.000	100.000	100.000	100.000	100.000
Grand total cost exclusive of raw material	21.011	19.223	21.962	22.446	20.832	21.095

¹ Dressed weight basis. Where no figure is given for a plant, either it did not incur a cost for the item or

analyses on a strictly comparable basis due to different methods of record keeping, grouping of cost items, methods of cost and depreciation calculations, and the lack of similar detailed and comparable data for all of the plants studied. An effort was made to obtain data on as nearly comparable a basis as possible and where comparable data could not be obtained or satisfactorily adjusted, data either were not used or the limitations indicated.

In this report, processing or plant costs will be discussed first and then other or non-plant costs. In processing there are both direct and indirect costs. Other or non-plant costs are composed chiefly of general and administrative overhead costs. The discussion will follow the order

of the cost items in tables 8, 9, and 10, the master tables of the report, following a brief discussion of total costs.

Total Cost

The total average cost of New York dressed chicken was 40.8 cents per pound, dressed weight basis, at 10 plants for which comparable data were available in 1947-48. The range, 36.7 to 43.6 cents, was 6.9 cents per pound between plants (table 8). There was little difference in total costs among the groups of plants. The highest total cost was in a large (group I) plant and the lowest in a medium (group II) plant. Raw material costs were generally highest in the large plants and lowest in the small plants.

percentages of total cost, at 10 dressing plants, 1947-48¹

Group and plant									
II—Medium				III—Small			10 plants		
Plant F	Plant H	Plant J	Average ²	Plant L	Plant N	Average ²	Average ²	Range	Amount of range
Percent									
72.230	79.610	84.111	78.650	76.273	74.528	75.401	78.128.	72.230- 84.111	11.881
8.924	6.689	7.251	7.621	8.461	6.221	7.341	6.699	2.646- 8.924	6.278
4.683	5.877	4.713	5.091	7.769	9.741	8.755	5.846	4.653- 9.741	5.088
5.108	3.755	-----	2.954	1.169	.423	.796	1.673	----- 5.108	5.108
1.378	.401	.335	.705	1.485	-----	.742	1.511	----- 3.566	3.566
-----	.185	-----	.062	-----	-----	-----	.126	----- .423	.423
1.790	1.462	1.166	1.473	1.366	2.353	1.860	1.690	.850- 2.651	1.801
94.113	97.979	97.576	96.556	96.523	93.266	94.895	95.673	92.799- 97.979	5.180
1.689	.456	.466	.870	1.393	.705	1.048	1.033	.456- 1.761	1.305
95.802	98.435	98.042	97.426	97.916	93.971	95.943	96.706	93.971- 98.435	4.464
.669	.005	-----	.225	.319	1.026	.673	.825	----- 3.114	3.114
3.529	1.560	1.958	2.349	1.765	5.003	3.384	2.469	1.340- 5.003	3.663
4.198	1.565	1.958	2.574	2.084	6.029	4.057	3.294	1.391- 6.029	4.638
100.000	100.000	100.000	100.000	100.000	100.000	100.000	100.000	100.000-100.000	0
27.770	20.390	15.889	21.350	23.727	25.472	24.599	21.872	15.889- 27.770	11.881

data were not available. ² Average for all plants listed here whether or not a figure is given in this table.

Of the total cost of New York dressed chicken at 10 plants, 78.1 percent was the cost of the live chickens (table 9). There was a variation of 11.9 percentage points among the plants, from 72.2 to 84.1 percent.

Total cost—direct, indirect, and overhead—of handling chickens, including selling but excluding the cost of the live chickens, was from 5.8 to 11.8 cents per pound with a 10-plant average of 9.0 cents (table 8). The lowest average handling cost among the three size groups was 8.6 cents at the five large plants. The average was 8.8 cents at three medium plants and 10.2 cents at two small plants (figure 5).

Of the total cost, exclusive of the cost of the live chickens, the direct

and indirect plant costs constituted an average of 85.2 percent (table 10). These costs ranged from a low of 73.3 to a high of 93.3 percent. The other or non-plant costs, essentially general overhead, constituted an average of 14.8 percent of the total. The medium, group II, plants had the smallest average non-processing cost, the smaller group III, was highest, and large, group I, was between the two.

The different costs and groups of costs are discussed here in the order they appear in tables 8, 9, and 10.

Plant Costs

Plant or processing costs in this report are all direct costs incurred from hauling from the farm to the dressing plant to cooling and pack-

Table 10.—Costs of New York dressing chickens in

Cost item	Group and plant					
	I—Large					
	Plant A	Plant B	Plant C	Plant D	Plant E	Average ²
	Percent					
Plant costs:						
Direct:						
Shrinkage.....	38.144	14.803	35.017	11.788	39.588	27.868
Labor.....	26.949	25.365	21.188	21.061	27.639	24.441
Materials:						
Hauling.....	5.849	4.214	5.496	9.600	4.174	5.867
Feeding.....	6.412	18.548	7.823	11.850	10.663	11.059
Dressing.....	.363	2.203	.761	1.809	-----	1.027
Cooling and packing.....	4.044	10.562	9.617	11.809	5.390	8.284
Total direct cost.....	81.761	75.695	79.902	67.917	87.454	78.546
Indirect (overhead).....	8.381	4.613	2.419	5.409	5.869	5.338
Total plant cost.....	90.142	80.308	82.321	73.326	93.323	83.884
Non-plant costs:						
Selling.....		6.183	8.584	13.874	.246	5.777
General and Administrative (overhead).....	9.858	13.509	9.095	12.800	6.431	10.339
Total non-plant cost.....	9.858	19.692	17.679	26.674	6.677	16.116
Grand total cost.....	100.000	100.000	100.000	100.000	100.000	100.000

¹ Dressed weight basis. Where no figure is given for a plant either it did not incur a cost for the item or data were not available.

ing in the plant, plus that portion of the indirect or plant overhead chargeable to plant operations. Some of the plant costs are direct; others are indirect. Direct plant costs are discussed first.

Direct Costs

As used in this report, direct costs are costs which are variable. They vary in total amount as the volume of product increases or decreases but on a per unit basis they are not affected, or are affected less than indirect costs, by changes in volume.

In terms of percentage of the total costs of New York dressed poultry, the direct costs at 10 plants made up an average of 95.7 percent and ranged from 92.8 to 98 percent (table 9). In terms of cents per

pound at these plants the direct costs averaged 39.1 cents per pound with a range of 35.8 to 42.3 cents (table 8). Omitting the cost of the live chickens, the average direct plant cost was 7.2 cents per pound and the range 4.9 to 9.3 cents. It constituted an average of 80.5 percent at the 10 plants, with a range among plants of 67.9 to 90.1 percent (table 10). Group I had the lowest percentage and group II the highest.

Raw Materials

Live Chickens: The prices paid for live chickens at the farm averaged 78.1 percent of the total cost of the New York dressed poultry with a 10-plant range of 72.3 to 84.1 percent. The price of the live poultry constituted such a large part of the

percentages of total cost, at 10 dressing plants, 1947-48¹

Group and plant—Continued										
II—Medium				III—Small			10 plants			
Piant F	Plant H	Plant J	Aver- age ‡	Plant L	Plant N	Aver- age ‡	Aver- age ‡	Range	Amount of range	
Percent—Continued										
32.134	32.804	45.637	36.858	35.659	24.420	30.039	30.998	11.788– 45.637	33.849	
16.865	28.825	29.659	25.116	32.745	38.241	35.493	26.854	16.865– 38.241	21.376	
18.392	18.413	-----	12.268	4.926	1.662	3.294	7.273	----- 18.413	18.413	
4.963	1.966	2.109	3.013	6.260	-----	3.130	7.059	----- 18.548	18.548	
-----	.909	-----	.303	-----	-----	-----	.604	----- 2.203	2.203	
6.447	7.172	7.338	6.986	5.757	9.239	7.498	7.738	4.044– 11.809	7.765	
78.801	90.089	84.743	84.544	85.347	73.562	79.454	80.526	67.917– 90.089	22.172	
6.082	2.239	2.932	3.751	5.869	2.770	4.320	4.658	2.239– 8.381	6.142	
84.883	92.328	87.675	88.295	91.216	76.332	83.774	85.184	73.326– 93.323	19.997	
2.409	.023	-----	.811	1.344	4.028	2.686	3.670	----- 13.874	13.874	
12.708	7.649	12.325	10.894	7.440	19.640	13.540	11.146	6.431– 19.640	13.209	
15.117	7.672	12.325	11.705	8.784	23.668	16.226	14.816	6.677– 23.668	16.991	
100.000	100.000	100.000	100.000	100.000	100.000	100.000	100.000	100.000–100.000	0	

Average for all plants listed here whether or not a figure is given in this table.

total cost of New York dressed poultry that a small percentage variation in this cost item can dwarf all other cost items. The average price for the period advanced by the 10 plants was 31.9 cents with a range from 30.5 to 34.4 cents (table 8). For 12 plants these prices are shown in summary form in table 11. This range in price among plants was due in part to the varying percentages of broilers and fowl handled, geographical locations, and seasonal volume in relation to seasonal price. There was no consistent difference due to plant size.

The price level of live poultry is especially important because the shrinkage cost may be an important factor in determining the necessary

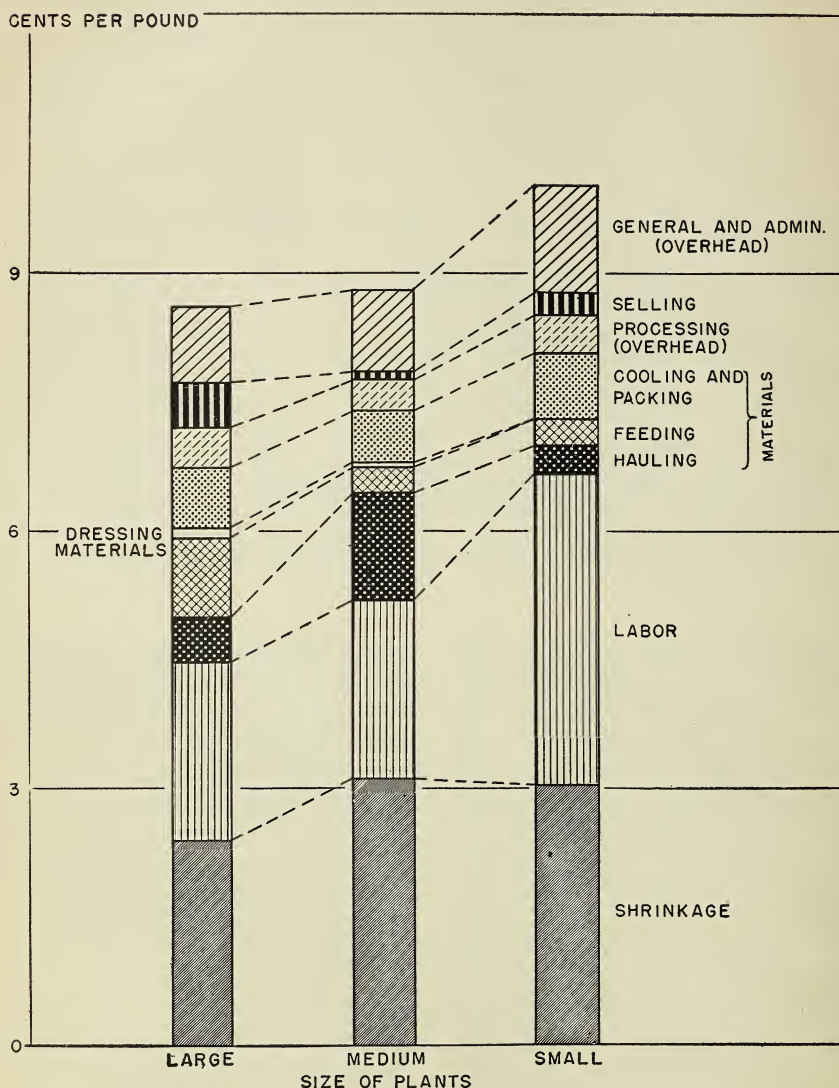
over-all handling margin. Shrinkage costs vary with the cost of the live poultry as well as with the amount of shrinkage.

Live Turkeys: The advances paid farmers for live turkeys were obtained at several of the plants. At the two plants handling the largest volumes of turkeys, the average prices paid were 36.2 and 36.9 cents per pound.

Shrinkage

Aside from the cost of the live poultry, shrinkage at most plants was the largest single item of cost. As shown in table 10, it averaged 31.0 percent of the total New York dressing cost with a range from 11.8 to 45.6 percent. At the medium-

Figure 5.—Costs in cents per pound of New York dressing chickens in 3 plant groups, 1947-48.



sized plant J it made up 45.6 percent of the total cost. On the other hand, at two of the large plants, B and D, it was only 14.8 and 11.8 percent respectively. At both of

these plants important feeding gains offset in part the hauling and dressing shrinkages. In cents per pound, at the 1947-48 price paid for live chickens, the shrinkage cost aver-

aged 2.7 cents per pound with a range from 1.1 to 3.8 cents. As stated above, the shrinkage cost was lowest at large plants B and D where feeding was done. There was little difference in the average shrinkage costs between group II and group III plants. The average for group I plants was less because of the small shrinkage costs at plants B and D.

The cost of shrinkage depends in part upon the cost of the poultry product put into process and in part on the amount of shrinkage. As an illustration, if the cost of live poultry is 30 cents a pound and in New York dressing it shrinks 10 percent, the cost of New York dressed poultry will be 33.3 cents per pound, because of the shrinkage alone. If New York dressed poultry at 50 cents a pound is eviscerated and the shrinkage is 20 percent, the value of the eviscerated product will be 62.5 cents a pound without any other costs added. Or, in reverse, if the value of the poultry meat in an eviscerated bird is 71.4 cents a pound, based on a total live-to-eviscerated shrinkage of 30 percent, the bird in live form is worth 50 cents a pound if no other than the shrinkage cost is included.

With a farm price for live chicken varying among the 10 plants a maximum of 3.8 cents a pound the average difference in the shrinkage costs due to this factor for the period as a whole was as much as 0.4 cent per pound of New York dressed birds.

Shrinkage costs may occur at three points in New York dressing poultry. The first is road or hauling shrinkage which occurs in haul-

Table 11.—Average advance paid producers at farm for live chickens by 12 plants, 1947-48 ¹

Group and plant	Amount paid per pound
I—Large:	<i>Cents</i>
A-----	32.1
B-----	30.5
C-----	31.3
D-----	33.8
E-----	32.5
Average-----	32.0
II—Medium:	
F-----	30.7
G-----	32.8
H-----	34.4
I-----	31.9
J-----	30.9
Average-----	32.1
III—Small:	
L-----	31.3
N-----	31.2
Average-----	31.3
Average 12 plants--	32.0

¹ Unweighted averages.

ing live poultry from the farm to the dressing plant. The second is shrinkage at the plant prior to dressing. This applies to turkeys in particular. The third is the dressing shrinkage which occurs in the killing and dressing of the poultry. These shrinkages may be offset in part by a gain in weight due to plant feeding. In eviscerating there is an additional shrinkage.

Road Shrinkage. Hauling shrinkage on individual birds is due chiefly to loss of body moisture and to normal excretion. However, loss in net weight of a load of live poultry may be due also to the loss of birds from death, theft, escape, and other causes. The average of the estimates on these death and miscellaneous losses from the time

Table 12.—Hauling shrinkage of live broilers and mixed chickens from farm to 10 dressing plants, by months and 12-month average, 1947-48¹

Year and month	Broilers					Mixed chickens									
	Plant					5-plant average	Percentage of annual average	Plant					5-plant average	Percentage of annual average	
	A	B	C	D	E			F	H	I	J	L			
Percent															
1947:	2.4	1.8	3.0	4.2	2.1	2.7	96	3.4	1.7	3.5	3.6	3.3	3.0	94	
	3.0	2.0	3.9	4.2	3.0	3.2	114	3.0	1.6	1.9	5.0	2.5	72		
	2.7	2.0	2.8	3.5	3.6	2.9	104	3.5	3.3	4.2	3.6	2.8	3.5		
	3.2	2.1	3.0	3.4	2.9	2.9	104	3.6	1.5	1.6	5.9	3.0	75		
	3.2	2.3	2.9	3.3	3.1	2.9	104	3.5	2.8	(²)	(²)	3.2	100		
	2.6	2.4	2.5	2.4	3.1	2.6	93	4.2	2.6	5.8	(²)	2.5	119		
	3.2	2.2	1.9	2.2	2.8	2.5	89	3.7	1.2	3.8	(²)	2.9	91		
	2.9	2.0	1.4	1.6	3.2	2.2	79	3.7	1.7	4.4	(²)	2.6	97		
	2.7	2.2	2.7	(²)	3.2	2.7	96	3.6	3.5	1.4	(²)	2.1	84		
	2.7	2.8	3.1	2.6	3.2	2.9	104	3.4	2.0	4.8	(²)	2.5	100		
	2.5	2.4	3.6	2.4	2.6	2.7	96	(²)	2.7	6.5	(²)	2.4	122		
	2.5	2.9	2.1	3.2	2.2	2.6	89	(²)	2.3	4.1	(²)	2.0	88		
Average	2.8	2.3	2.7	3.3	2.9	2.8	100	3.6	2.7	3.8	4.5	2.7	3.2	100	

¹ Shrinkages of poultry delivered by producers not included. Averages are of monthly percentages unweighted.

² Not available.

the catching crews started to catch a farmer's poultry until the poultry was delivered into the feeding station was 2 birds per 1,000 birds, or 0.2 percent. In occasional instances hauling death loss was high at most of the plants although at no plant were accurate records kept on this loss. Smothering chickens at catching time, overheating on trucks because of hot weather and prolonged truck halts, and storms were determined as causes responsible where death losses of more than 75 chickens per truckload occurred.

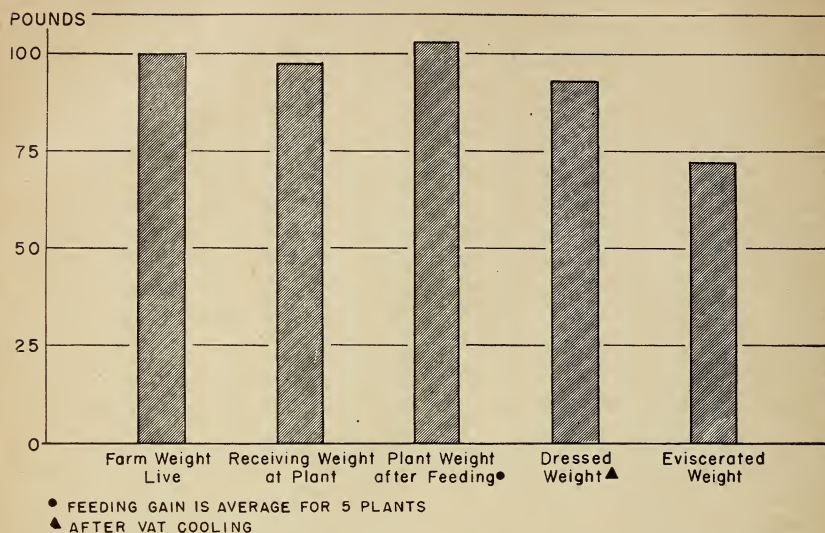
There was a rather wide variation in road shrinkage among 10 plants for which data were available. The shrinkage by months for 10 plants, arranged according to plant size, is shown in table 12. The percentages are for poultry hauled by association or commercial trucks and do not include poultry delivered by the producers. The figures are for five plants that dressed broilers almost exclusively and for five that dressed mixed types of chickens. Mixed chickens included varying percentages of broilers, fowl, and cocks. This affected the amounts of shrinkage. For instance, at plant I the range in percentage of hauling shrinkage was from 1.6 in August 1947 to 6.5 in March 1948. There was less variation by months (1.4 to 4.2 percent) in the hauling shrinkage in the broiler plants than among the mixed chicken plants (1.2 to 6.5 percent) as would be expected. On a 12-month basis, the broiler plants showed an average road shrinkage of 2.8 percent and the mixed chicken plants of 3.2 percent.

Seasonally the broiler plants show less fluctuation in road shrinkage

than the mixed poultry plants. The broiler plants show a downward trend in percentage of shrink from June to December; the mixed poultry plants show wider fluctuations with no marked seasonal trend. Broilers were most likely to have their greatest road shrinkage during the hot months. The hauling shrinkage on broilers was generally less from October through May than from June through September (table 12). The shrinkage in the low month of December was 79 percent as great as the annual average shrinkage. June was highest with 114 percent of the annual average. July, August, September, and February were second highest with 104 percent. Mixed chickens showed no definite shrinkage pattern although the smallest shrinkages are shown for two of the hot months, June and August.

Few data were available at the plants studied on road shrinkage of turkeys. At plant B, during October, the road shrinkage of turkeys averaged 3.7 percent. At plant J, which handled a small volume of turkeys, the identifiable road shrinkages averaged 1.7 percent. Turkey shrinkage at plant C was 1.7 percent in November and 1.4 percent in December. During November the shrinkage for hens was 1.44 percent and toms 1.84, while in December the shrinkage for hens was 1.72 and toms 1.24. The greatest road shrinkage for turkeys was 6.2 percent at plant B on a load caught in a storm. At plant E turkey road shrinkage was 0.9 percent in June, 1.7 percent in October, 1.0 percent in November, and 1.1 percent in December.

Figure 6.—Average weight changes in processing broilers, 6 plants, 1947-48.



No relationship appeared between size of plant and percentages of shrinkage. However, large plant B had the lowest road shrinkage, 2.3 percent. If large plants procure poultry from a larger area than smaller plants, their handling shrinkage is likely to be larger. Factors in the heavier shrinkage in the mixed chicken plants over the broiler plants in addition to the type of poultry are the longer hauling distance, the larger number of stops, and the consequent longer time in the truck and on the road.

Little representative information was available in this study to show shrinkage from hauling live poultry long distances. However, data were available for a number of individual loads of poultry hauled relatively long distances. Shrinkage on one load of live broilers hauled 425 miles was 9.6 percent. Another load

hauled 650 miles shrank 4.8 percent. The latter had been loaded at a poultry plant and had therefore already undergone a road shrink between the farm and reloading point. Two other loads were hauled 210 miles from farms for live sale. The shrinkage on one load of 1,118 head of pullets was 152 pounds or 2 percent. The shrinkage on the other, a load of 1,343 fowl, was 263 pounds, or 3 percent.

Plant Shrinkage: By plant shrinkage is meant here the decrease in the weight of the poultry from the time it is received at a plant alive to its weight after New York dressing. New York dressing shrinkage means the shrinkage of poultry from the time it is hung on the dressing line to the time it is New York dressed. In plants where no feeding was done and the birds were dressed immediately after they were received, plant

and dressing shrinkage were the same. Since seven of the plants included in this study did some feeding of poultry, it became necessary to analyze feeding gain as a factor offsetting shrinkage.

Feeding Gain: Whether to feed or not to feed for weight gain has been much discussed. Obviously the answer may not depend solely upon the money value of the weight gain over the cost of this gain. Other factors must be considered, such as having a supply of live poultry on hand to even out production-line operations, to allow flexibility in killing for special customer size and grade requirements, to put birds in a heavier weight group if prices there warrant, and to obtain dressing and quality improvement by feeding finishing feeds. Apparently these factors were given some consideration by the cooperatives. In any instance, it is well for plant managers to calculate the costs of feeding in relation to probable increased returns from plant feeding.

Plants A, B, C, D, E, F, and L fed poultry for gain while plants G, H, I, J, K, M, N, and O fed only for holding—if at all.

Essentially the plants which fed

for feeding gain were the larger broiler plants. It was the opinion of most of the plant managers that young and healthy poultry fed in the plants would gain in weight but at a rate which decreased with the time in the feeding room. Old and fattened poultry was thought to respond less favorably to feeding. Shrinkage caused by water losses and excretion can usually be completely recovered by watering and feeding on the road or in the plant.

When poultry is resold alive the road shrinkage may be costly. However, except for death losses, this is usually easily recovered by healthy birds if they have a place and time to eat and drink. An exception to this are turkeys which will not eat when kept in confinement away from their usual surroundings.

Even when poultry is to be New York dressed soon after receiving it at the plant, it is important to replace the lost body moisture as far as possible while the bird is still alive because the dressed poultry will not absorb as much moisture while in the cooling vats as may have been lost in the farm-to-plant hauling. If the poultry is to be

A concrete-type vat being used to cool turkeys. Immediate, rapid, and thorough cooling is necessary to avoid quality deterioration.



Table 13.—Plant feeding gains at 5 dressing plants by months and 12-month average in percentage increases over weights at arrival at plants, 1947–48

Year and month	Feeding gains					
	Plant					15-plant average
	B	C	D	E	F	
	Percent					
1947:						
May	6.2	3.3	8.4	3.3	2.6	4.8
June	4.5	4.0	4.5	3.4	2.4	3.8
July	6.5	3.2	8.0	4.5	5.5	5.5
August	8.3	4.4	9.9	4.1	3.2	6.0
September	5.7	4.3	(²)	2.8	2.8	3.9
October	4.6	3.8	7.9	(²)	4.6	5.2
November	7.8	(²)	7.9	(²)	5.5	7.1
December	6.0	(²)	7.1	(²)	2.5	5.2
1948:						
January	11.6	5.5	(²)	(²)	1.9	6.3
February	8.7	3.7	3.6	(²)	1.8	4.5
March	7.7	4.9	6.8	(²)	(²)	6.5
April	8.2	3.3	9.1	(²)	(²)	6.9
Average	7.2	4.0	7.3	3.6	3.3	5.1

¹ Averages are unweighted. Averages are not comparable due to differences in number of items.

² Not available.

drawn or eviscerated, water loss will be of less importance because after the viscera which contains much of this water is removed, the resulting carcass is likely to change little in moisture content. Poultry purchased for evisceration is usually not fed for gain as the salable feeding gain is limited to gain in weight of the edible parts whereas salable feeding gain in poultry to be New York dressed may include also additional water, inedible parts, undigested feed, and grit.

In the plants dressing chiefly broilers, it was the intention of the management to feed for 3 or 4 days before slaughtering. This could not always be done because none of the feeding rooms were large enough to hold as many broilers as could be killed in 3 days. As a result, feed-

ing periods were varied to best fit demands of customer orders, labor distribution in the plants, pool dates, and volume of receipts. The longest period of feeding for gain was 4 days at plant B at brief intervals. Plants C and D often fed 3 days but usually for only one or two. Plants E and F fed for gain about 2 days. At times plant F fed for as long as a week to accumulate the desired volume of live poultry for New York dressing.

Satisfactory data on plant feeding gains were obtained at five of the seven broiler plants which fed for feeding gain (table 13). The data for some of the plants were not available for some months so the averages are not comparable in all instances. The average feeding gain over the receiving weight at the

plants was 5.1 percent for 47 plant-months. Due to a number of factors the percentages of feeding gain for individual plant months showed a wide range—from a low of 1.8 to a high of 11.6 percent. Although the length of the feeding period was undoubtedly a major factor, the data did not show a definite relationship between the feeding gain and the length of the feeding period. The largest plants tended to obtain the highest percentages of gain. Plant D obtained

1.4 million pounds of feeding gain was 36.3 cents per pound of gain (table 14). Of this, 24.2 cents was direct cost and 12.1 cents plant and general overhead. During the same period these four plants paid their patrons an average of 31.6 cents per pound for 21.4 million pounds of live poultry.

A comparison of the average prices paid to producers over the period and the total average cost of feeding per pound of gain at these plants is as follows:

Item	Plant				Average
	B	C	D	F	
	Cents				
Average price paid producers.....	30.5	31.3	33.8	30.7	31.6
Average cost of feeding gain.....	33.5	44.2	31.1	36.9	36.3
Cost of feeding gain over paying price.....	3.0	12.9	-2.7	6.2	4.7

an average of 7.3 percent increase over the weight received into the plant. This was the highest average feeding gain during the months covered in the study. Plant B was essentially as high with 7.2 percent. Plant C was able to get 4.0 percent feeding gain, and plants E and F obtained 3.6 and 3.3 percent respectively. Feeding gains were more likely to be below the average chiefly during the warm months and above the average during the cold months.

Pellets were fed at plants B and F and dry or wet mashers at plants C, D, and E. The data were inadequate for a valid comparison of gains on pellet versus mash feeds.

The average cost at four plants of

In three of the four plants the cost of the feeding gain was greater than the average price paid producers for poultry. In plant D there was a gain of 2.7 cents per pound. The average cost of feed gain over purchase price for the four plants was 4.7 cents per pound. As stated above, the improvement of quality, increased efficiency of plant operation, and other factors may offset in whole or in part this greater cost of obtaining poundage by feeding rather than by purchase.

The above comparison is made on the assumption that the proportion of poundage of birds fed remained the same in relation to purchases and that the birds fed for gain were of the average size and quality. In

actual practice, however, more poultry is likely to be fed when the price of live chickens is most favorable in relation to the price of feeds.

The profitability of feeding for gain may depend upon the proportion which the direct costs are of total cost of feeding gain. When an important part of the general overhead is carried by the feeding operations, these operations will be looked

upon more favorably from the standpoint of over-all operations than if the general overhead allocation is relatively small. Table 14 gives a breakdown in cents per pound and in percentages of costs of feeding gains at plants B, C, D, and F. In this table, costs are in three groups: Direct and indirect feeding, and general overhead.

The cost items may be summar-

Table 14.—Costs of feeding gain in cents per pound and in percentages of feeding gain cost at 4 poultry dressing plants, May 1947–April 1948¹

Cost item	Plant				Average
	B	C	D	F	
	Cents per pound				
Feeding costs:					
Direct:					
Labor-----	5.7	10.4	4.9	4.8	6.4
Feed-----	19.8	20.0	15.2	15.6	17.6
Feeding supplies-----	.5		.1		.2
Miscellaneous-----		.1			
Total direct cost-----	26.0	30.5	20.2	20.4	24.2
Indirect (overhead)-----	1.9	2.9	3.2	5.2	3.3
Total feeding cost-----	27.9	33.4	23.4	25.6	27.5
Other costs: General and administrative (overhead)-----	5.6	10.8	7.7	11.3	8.8
Grand total cost-----	33.5	44.2	31.1	36.9	36.3
	Percent				
Feeding costs:					
Direct:					
Labor-----	17.0	23.5	15.8	13.0	17.3
Feed-----	59.1	45.2	48.9	42.3	48.9
Feeding supplies-----	1.5	.1	.3		.5
Miscellaneous-----		.3			
Total direct cost-----	77.6	69.1	65.0	55.3	66.7
Indirect (overhead)-----	5.7	6.5	10.4	14.1	9.2
Total feeding cost-----	83.3	75.6	75.4	69.4	75.9
Other costs: General and administrative (overhead)-----	16.7	24.4	24.6	30.6	24.1
Grand total cost-----	100.0	100.0	100.0	100.0	100.0

¹ The indirect (overhead) feeding cost and general and administrative costs are allocations to the feeding operations.

ized as follows in cents per pound of feeding gain cost:

	Cents
Feed.....	15.2 to 20.0
Direct labor.....	4.8 to 10.4
Plant overhead.....	1.9 to 5.2
General overhead.....	5.6 to 11.3
Total cost.....	31.1 to 44.2

The range in the costs of feed gains was due in large part to the volume of poultry fed. Feeding operations required considerable capital outlay for the live poultry, for the feeding room facilities, batteries, equipment, and feed. Skill in feeding and good judgment in selecting birds to feed and the amount of feeding to do in each instance were important in plant feeding operations.

Feed was the most important direct cost. It amounted to 48.9 percent of the total cost of feeding gain. The only other important direct cost was feeding room labor which constituted 17.3 percent of the total cost of gain.

Indirect overhead ranged from 5.7 to 14.1 percent with a 4-plant average of 9.2 percent. General overhead costs ranged from 16.7 to 30.6 percent of the total feeding gain cost with an average of 24.1 percent for the four plants. General overhead and plant overhead averaged one-third of the total cost of the feeding gain.

Death Losses: It was found that death losses in the feeding rooms were about 2 birds per 1,000 (0.2 percent) when the birds were fed for a period of time and one bird per 1,000 (0.1 percent) when the birds were killed without being fed and as soon as possible after arrival at the plant.

Dressing Shrinkage: Dressing shrinkage is here considered as the difference between the weight of live poultry at the time of killing and the weight of the product when either New York dressed or eviscerated. It was not possible to obtain accurate data from all plants on this basis and as a result some data include some road shrinkage and feeding gains or losses.

New York Dressed Broilers: The data obtained at six plants on shrinkage in New York dressing of broilers show a percentage variation among plants from 7.8 to 10.6 percent with an average of 9.3 percent (table 15). A less-than-average shrinkage occurred from May through September and a higher-than-average shrinkage for October through April. Plant feeding for weight gain was done at all the plants except plant H where only live poultry held over from the

An attractive pack of properly wrapped and boxed ready-to-cook poultry.



Table 15.—New York dressing shrinkage: Percentage of shrinkage of broilers from live to New York dressed at 6 plants by months, 1947-48

Year and month	Plant						Average of plant months ²
	A ¹	B	C	D	F	H ¹	
	Percent						
1947:							
May.....	7.8	(*)	(*)	(*)	8.4	8.6	8.3
June.....	7.9	8.7	(*)	(*)	8.3	7.0	8.0
July.....	7.1	9.2	(*)	8.2	10.3	6.0	8.2
August.....	9.1	8.8	(*)	8.5	9.0	6.8	8.4
September.....	8.8	7.0	8.5	7.2	10.3	7.5	8.2
October.....	12.6	8.8	10.3	(*)	11.3	8.0	10.2
November.....	13.3	8.2	8.8	12.0	14.8	8.8	9.8
December.....	9.6	(*)	7.4	(*)	11.8	9.3	9.5
1948:							
January.....	11.4	(*)	(*)	(*)	11.0	7.5	10.0
February.....	10.9	6.6	9.3	11.8	11.1	7.1	9.5
March.....	10.0	(*)	9.8	10.7	10.0	8.9	9.9
April.....	9.8	(*)	8.3	12.6	(*)	8.3	9.8
Average ²	9.9	8.2	8.9	10.1	10.6	7.8	9.3

¹ At plants A and H the shrinkage was calculated on the basis of the difference between the weight at the time received at the plant and after dressing. Plant A fed for feeding gain but plant H for live holdover only.

² Unweighted.

* Data not available.

Table 16.—New York dressing shrinkage: Percentage of shrinkage of turkeys from live to New York dressed at 4 plants by months, 1947-48 ¹

Year and month	Plant				Average of plant months
	A	B	E	G	
	Percent				
1947:					
May.....	5.9	(*)	(*)	(*)	5.9
June.....	5.7	(*)	5.1	(*)	5.4
July.....	5.8	(*)	(*)	(*)	5.8
August.....	8.1	(*)	(*)	(*)	8.1
September.....	8.4	(*)	13.4	(*)	10.9
October.....	9.1	(*)	7.7	(*)	8.4
November.....	12.0	8.0	8.9	10.0	9.7
December.....	10.4	(*)	8.2	10.0	9.5
1948:					
January.....	9.8	(*)	(*)	9.9	9.9
February.....	(*)	(*)	(*)	(*)	-----
March.....	(*)	(*)	(*)	(*)	-----
April.....	9.1	(*)	(*)	(*)	9.1
Average.....	8.4	8.0	8.7	10.0	² 8.8

¹ For the most part these percentages are based on weights at the farm and therefore include hauling shrinkage.

² Average of annual plant averages.

* Data not available.

day's operations was fed. The figures for plants A and H were not entirely comparable with those of the other four plants as they were based on live weight prior to feeding rather than on the weight just before killing. Based on observations only, the better quality poultry had a lower New York dressing shrinkage than poor quality poultry.

New York Dressed Turkeys: Most of the turkeys were weighed at the farm. The shrinkages to New York dressed are, therefore, the total shrinkage from the farm to New York dressed and include the hauling shrinkage.

The average shrinkage for the four plants was 8.8 percent with a range from 8 to 10 percent among plants (table 16).

A definite seasonal pattern of shrinkage was observed at plant A. The low month was June with a shrinkage of 5.7 percent; the high month was November with 12.0 percent. The low shrinkage during May, June, and July was due in part to the smaller shrinkage which usually occurs in dressing breeder hens. The heavy marketings of young turkeys during the other months resulted in heavier shrinkages.

Condemnation Loss: At one plant 0.21 percent of the number of broilers New York dressed was condemned as unfit for food. Similar figures for turkeys showed 0.12 percent of the number handled was condemned. The average weight of the condemned birds, estimated by the management, was about three-fourths as much as normal birds. The portions of the losses due each to improper bleeding, disease, low quality making the dressed bird unfit for food, and other individual causes were not ascertainable.

Total Net Shrinkage: Table 17 is a summary table of the shrinkages of broilers at the different stages of marketing and processing, including evisceration, by six cooperative plants for which satisfactory data were available. This table covers broilers for the most part but a small percentage of the birds were other types of chickens. (Figure 6.)

As determined in this study, 100 pounds of live broilers at the farm will weigh, on an average, 97.2 pounds when received at the plant, 102.2 pounds after a short period of plant feeding, 92.7 pounds when New York dressed, and 72.1 pounds when eviscerated.

Mixed chickens showed a heavier

Table 17.—Weight changes in marketing and processing broilers, farm to eviscerated, average of 6 plants, 1947-48¹

Item	Weight change	Weight remaining
	Percent	Pounds
Farm weight, live.....	100.0	100.0
Hauling shrinkage, farm to plant.....	—2.8	97.2
Feeding gain at plant.....	5.1	102.2
New York dressing shrinkage.....	• —9.3	92.7
Evisceration shrinkage.....	—22.2	72.1

¹ A small undeterminable percentage of other than broilers was included in data. The 6 plants were essentially broiler plants.

farm-to-plant shrinkage (3.2 versus 2.8 percent) than did broilers. Older birds usually gained less by plant feeding but usually had a smaller New York dressing and evisceration shrinkage than broilers.

It is probable that mature chickens will show a smaller reduction in weight from live to New York dressed and from New York dressed to eviscerated than broilers.

Labor: Average cost of direct

Table 18.—Hourly and weekly rates of pay in 15 poultry dressing plants, 1947-48

Plant	Labor	Clerical help	New York dressing foreman	Plant manager
	<i>Hourly</i>	<i>Weekly</i>	<i>Weekly</i>	<i>Weekly</i>
A-----	\$0.60	\$30.00-\$50.00	¹ \$26.00	\$53.00
B-----	.65	30.00-50.00	65.00-70.00	154.00
C-----	.65	30.00-43.00	50.00	144.00
D-----	.65	30.00-50.00	60.00-70.00	115.00
E-----	.60	40.00-43.00	44.00	60.00
F-----	.60	40.00-70.00	¹ 25.00-27.00	50.00-100.00
G-----	.50-.60	34.00-44.00	¹ 20.00	138.00
H-----	.65	(²)	¹ 42.40	80.00
I-----	.50	¹ 24.40-30.80	(Manager)	¹ 44.00-50.80
J-----	.60-.70	(²)	¹ 65.40	100.00
K-----	.65-.70	41.00	50.00	75.00
L-----	.60	¹ 24.00	¹ 24.00	48.00-56.00
M-----	.70-.75	¹ 28.00	30.00-45.00	60.00-72.00
N-----	.75-.85	(²)	¹ 40.00	60.00-73.00
O-----	.75-.80	40.00	48.00-60.00	87.00-100.00

¹ Weekly rate based on hourly rate for 40-hour week.

² Not available.

Note.—The 75 cents an hour minimum wage rate under the Fair Labor Standards Act, as amended in 1949, did not become effective until Jan. 23, 1950.

Table 19.—Number of workers employed in New York dressing at one plant in each size group, by operations, 1947-48

Operation	Group and plant		
	I—B	II—G	III—K
Hauling-----	14	2	1
Receiving-----	9		
Feeding-----	12		
Handling batteries-----	5	1	
Hanging-----	6	1	1
Killing-----	1	1	1
Pulling wing and tail feathers-----	4	4	1
Reversing chickens-----	5		1
Waxing-----	7		
Pinning-----	26	10	7
Cropping and venting-----	4	1	
Inspecting-----	1		
Cooling and icing-----	10	1	1
Packing-----	10	5	2
Administrative and supervisory-----	9	4	1
Total-----	123	30	16

labor in New York dressing chickens at 10 plants for the period was 2.4 cents a pound (table 8). The range was from 1.7 to 4.1 cents. Group I and II plants showed the same average cost. For two small group III plants the average was 74 percent higher. The cost of direct labor is generally exceeded only by the cost of the live poultry and of shrinkage in the New York dressed cost. In plants B, D, and N, however, the labor cost was higher than the shrinkage cost.

Omitting the cost of the live poultry, direct labor constituted an average of 26.9 percent of the total cost at 10 plants (table 10). The range in this instance was wide, from 16.9 to 38.2 percent.

Rate of Pay: Table 18 gives the rates of pay for plant and other labor, clerical help, dressing foremen, and managers. Only hauling, plant, and other processing labor rates are discussed here as direct labor.

There was a wide range in direct hourly labor rates among the 15 plants—an over-all range from 50 to 85 cents an hour.⁷

The hourly rates for labor were highest at plant N where rates ranged from 75 to 85 cents an hour. Plant O was almost as high with 75 to 80 cents per hour. Plants B, C, D, and H paid 65 cents per hour. Plant I paid 50 cents per hour, the lowest wage rate. It was followed by plant G at 50 to 60 cents per hour. Plants A, E, F, and L paid 60 cents per hour. Plant J paid 60



The preparation of ready-to-cook or eviscerated poultry in a modern, sanitary, well-equipped plant.

to 70 cents and plant M 70 to 75 cents.

The chief factor in the difference in labor rates was due to geographic location. Generally the plants in the New England States had the highest hourly rates.

Wage and salary rates were probably more dependent upon competing job opportunities on the outside and the activity of labor organizations than upon productivity per man hour in the 15 plants studied.

Number of Employees Used: An attempt was made to determine the number of direct labor employees used for each job or process and the rate of pay of each according to the

⁷ The Fair Labor Standards Act, as amended in 1949, setting a minimum wage of 75 cents an hour, did not become effective until January 23, 1950.

Table 20.—Total man-hours: Percentages used, 15 poultry dressing plants, by operations, 1947-48

Labor item	Number of plants ¹	Hours used	
		Average ²	Range ²
Handling:		<i>Percent</i>	<i>Percent</i>
Direct:			
Hauling-----	12	10. 09	3. 60- 24. 01
Receiving-----	13	6. 96	. 10- 14. 44
Feeding-----	7	10. 89	2. 10- 18. 94
New York dressing:			
Killing and bleeding-----	15	6. 07	2. 18- 13. 68
Scalding-----	1	. 26	. 26- . 26
Picking-----	15	10. 32	2. 95- 16. 99
Waxing-----	3	5. 39	2. 71- 9. 19
Pinning-----	15	17. 79	5. 60- 40. 00
Checking and inspection-----	8	1. 08	. 31- 1. 84
Venting-----	5	1. 15	. 04- 2. 51
Cropping-----	6	1. 08	. 12- 1. 83
Washing-----	1	1. 87	1. 87- 1. 87
Cooling-----	7	2. 73	1. 76- 3. 62
Sorting and weighing-----	10	2. 74	. 42- 4. 60
Packing dressed poultry-----	14	10. 25	1. 51- 21. 30
Eviscerating and viscera disposal-----	9	25. 83	2. 04- 58. 18
Marketing-----	10	3. 53	. 21- 11. 83
Total direct-----		86. 50	67. 80- 94. 53
Indirect (overhead)-----		3. 40	17. 49
Total handling-----		89. 90	75. 17- 97. 59
Other: General and administrative (overhead)-----		10. 10	2. 41- 24. 83
Total-----		100. 00	100. 00-100. 00

¹ Number of plants performing function.

² Based on plants performing function.

job.⁸ The payroll records did not show exactly the work each employee performed. An approximation was therefore made by asking the managers and foremen the jobs each person did. Such an analysis could not be entirely accurate in any case and was least accurate in the smaller plants where employees

frequently did many jobs as needed. Such an analysis, however, shows the number of people the management normally regarded as required for each operation.

Of the direct labor jobs, pinning required the largest number of employees (table 19). At the time of the field work on this study, one-fourth to one-half of employees doing New York dressing were pinners. Due to the use of improved equipment and the sub-scald temperature, the portion is now much smaller.

Large plant B regularly fed

⁸ For further information on the number of workers by operations in poultry dressing plants see: Hurst, W. M., *Layout and Operations of Co-operative Poultry Dressing Plants*. Farm Credit Admin. Misc. Rept. 101. Multilith, 56 pages.

Amacker, George A., and Scanlan, John J., *Plans and Operations of Farm and Small Commercial Poultry Dressing Plants*. Farm Credit Admin. Misc. Rept. 147. Multilith, 53 pages.

Figure 7.—Average and ranges of percentages of total man-hours used by operations, 15 plants, 1947-48.

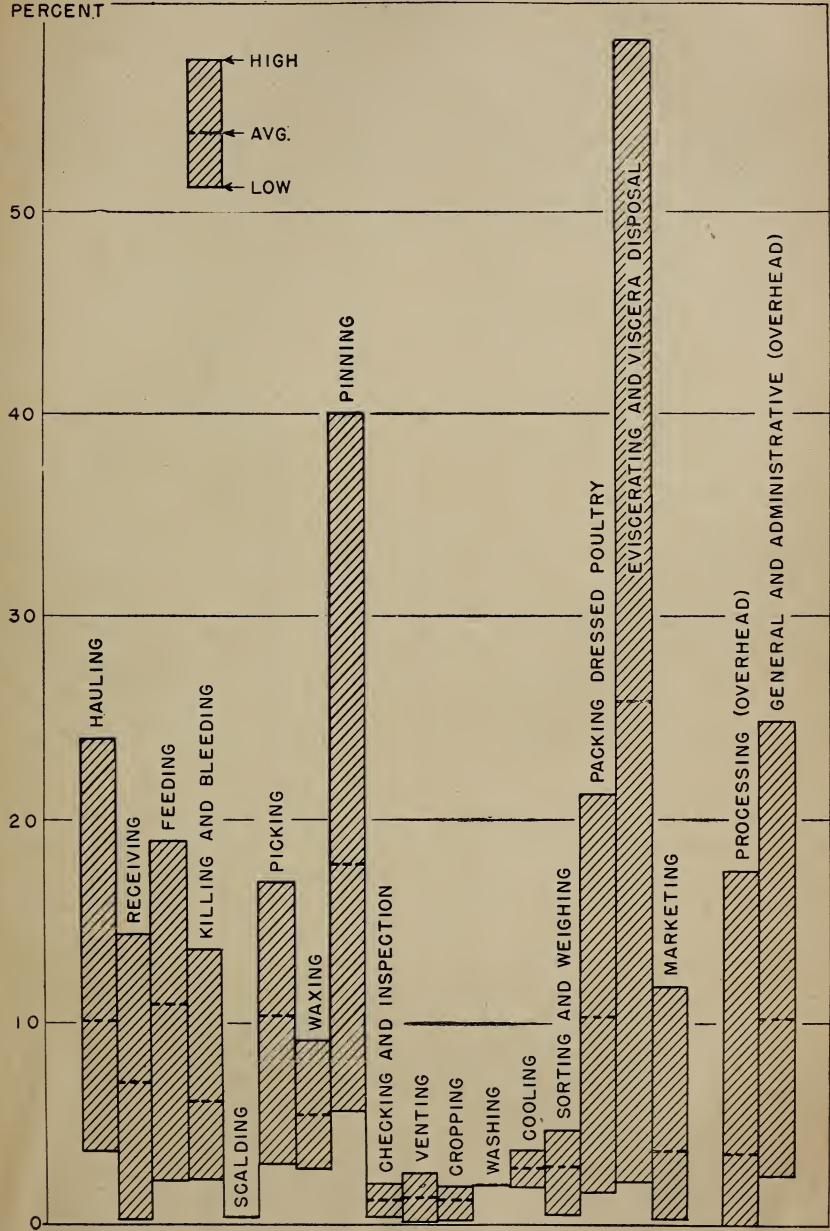


Table 21.—Regular man-hours: Percentages used, 15 poultry dressing plants, by operations, 1947-48

Labor item	Number of plants ¹	Hours used	
		Average ²	Range ²
Handling:			
Direct:		Percent	Percent
Hauling-----	12	9.40	3.58- 20.53
Receiving-----	13	6.52	.10- 13.48
Feeding-----	7	9.48	1.81- 14.95
New York dressing:			
Killing and bleeding-----	15	6.20	2.11- 14.93
Scalding-----	1	.31	.31- .31
Picking-----	15	10.61	2.86- 18.57
Waxing-----	3	5.44	3.05- 9.13
Pinning-----	15	19.32	5.88- 40.54
Checking and inspection-----	8	1.14	.33- 1.87
Venting-----	5	1.29	.04- 2.83
Cropping-----	6	1.19	.13- 2.06
Washing-----	1	1.99	1.99- 1.99
Cooling-----	7	2.83	1.67- 3.81
Sorting and weighing-----	10	2.72	.41- 5.09
Packing dressed poultry-----	14	9.73	1.57- 19.46
Eviscerating and viscera disposal-----	9	26.77	2.22- 60.88
Marketing-----	9	3.59	.21- 10.91
Total direct-----		86.90	66.48- 95.11
Indirect (overhead)-----		3.37	18.19
Total handling-----		90.27	74.37- 97.53
Other: General and administrative (overhead)-----		9.73	2.47- 25.63
Total-----		100.00	100.00-100.00

¹ Number of plants performing function.

² Based on plants performing function.

poultry for weight gain, wax-picked, and performed several other jobs not done by plants G and K, medium and small plants, respectively.

An analysis of the allocation of employees to jobs, if made currently in a plant, will show which jobs are most costly in regular and overtime work and show areas wherein managerial control to reduce plant payroll could be brought about by different or additional machinery and tools, plant layout, working hours, or numbers of employees. For example, better plant layout

would reduce the distance batteries must be moved from feeding station to shackling space and thereby reduce labor hours. The hiring of a full-time employee to do a job may be cheaper than having some employee do the job on overtime wages. In some few cases, plant managers consciously gave key employees some overtime jobs to bring their take-home pay to or above the minimum thought necessary to keep valuable employees.

Appendix tables A, B, and C, respectively, show the calculated direct labor standards for sample

Table 22.—Overtime man-hours: Percentages used, 15 poultry dressing plants, by operations, 1947-48

Labor item	Number of plants ¹	Hours used	
		Average ²	Range ²
Handling:		<i>Percent</i>	<i>Percent</i>
Direct:			
Hauling-----	12	22. 63	3. 99- 56. 55
Receiving-----	13	10. 51	. 10- 25. 11
Feeding-----	7	22. 18	5. 09- 39. 98
New York dressing:			
Killing and bleeding-----	15	4. 83	1. 23- 12. 73
Scalding-----	0	0	0
Picking-----	15	8. 68	2. 24- 28. 66
Waxing-----	3	5. 27	. 37- 9. 69
Pinning-----	14	5. 66	. 22- 18. 65
Checking and inspection-----	7	. 74	. 20- 1. 70
Venting-----	5	. 13	. 02- . 24
Cropping-----	5	. 29	. 03- . 62
Washing-----	1	1. 23	1. 23- 1. 23
Cooling-----	7	1. 98	. 55- 2. 83
Sorting and weighing-----	9	4. 17	. 52- 20. 05
Packing dressed poultry-----	14	14. 63	. 85- 32. 57
Eviscerating and viscera disposal-----	9	11. 87	. 78- 36. 27
Marketing-----	7	4. 74	. 21- 16. 16
Total direct-----		84. 38	70. 83- 99. 15
Indirect (overhead)-----		2. 44	12. 44
Total handling-----		86. 82	70. 83- 99. 15
Other: General and administrative (overhead)-----		13. 18	. 85- 29. 17
Total-----		100. 00	100. 00-100. 00

¹ Number of plants performing function.

² Based on plants performing function.

crews at the time of the study with conveyer-line equipment in New York dressing, eviscerating, and cutting up chickens at a flat average rate of 60 cents an hour. These tables are on the basis of 400 head an hour for New York dressing, 420 head an hour for eviscerating, and 420 an hour for cutting up. Costs at other wage rates may be figured by multiplying each dollar cost by a ratio to 60 cents per hour of the hourly rate under consideration.

Labor-Hour Requirements: The averages and ranges of the percentages of total hours, regular hours, over-

time hours and total hours used in direct labor jobs, for supervision, and general overhead in the 15 dressing plants are shown in tables 20, 21, and 22.

At the plants studied, direct labor constituted 86.5 percent of the total hours used, with a plant-by-plant range from 67.8 to 94.5 percent. The remaining percentages were for clerical, supervisory, and administrative purposes. In the use of total and regular work hours, pinning required a heavier percentage than any other operation except eviscerating and disposing of

viscera (tables 20 and 21). More than half of the overtime was used for hauling, receiving, and feeding (table 22).

Total Labor: By total direct labor is meant here both regular and overtime labor. Regular labor constituted 89.6 percent and overtime labor 10.4 percent of the total man-hours of direct labor (table 20).

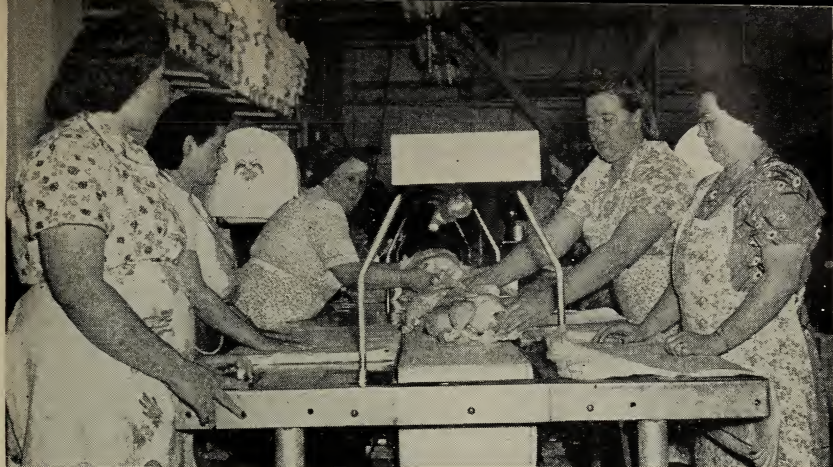
Killing and bleeding, picking, and pinning were the only New York dressing jobs common to all plants. Scalding and washing were labor-using jobs in only one plant in each case. Scalding only required 0.26 percent of the total man-hours at the plant where a scalding tender was listed.

Among 9 plants, eviscerating poultry required an average of 25.83 percent of the total direct labor hours. Pinning was second highest in those 9 cases and highest in the other 6 plants. It required an average of 17.79 percent and as high as 40 percent of the direct labor hours. Hauling, picking, feeding, and packing dressed poultry each required between 10.09 and 10.89 percent of the total man-hours at the plants concerned. Marketing, waxing, killing and bleeding, and receiving each required from 3.53 to 6.96 percent of total man-hours. The other 7 jobs each required from 0.26 to 2.74 percent of the time.

The great variability shown in the percentages of total direct labor hours devoted to each job was apparently due partly to plant operations and partly to the lack of comparable and accurate data. For instance, hauling ranged from 3.60 to 24.0 percent. (Figure 7.)

Regular Labor: The use of regular direct labor hours varied very little from the pattern of use of total direct hours (table 21). Receiving had the highest maximum-minimum ratio of percent of job use with 0.10 to 13.48 percent of the total. Venting was next with a range from 0.04 to 2.83 percent. Eviscerating and viscera disposal had the widest absolute range with 2.22 to 60.88 percent of the total regular hours. Eviscerating and viscera disposal used an average of 26.77 percent of the direct labor. Pinning was second with 19.32 percent. Picking, feeding, and hauling varied between averages of 9.40 and 10.61 percent. Receiving used an average of 6.52 percent and killing and bleeding 6.20 percent of the regular time. Waxing was the only other major job in 3 plants. It required an average of 5.44 percent of direct labor. The other jobs varied between 0.31 percent and 3.59 percent of total direct labor.

Overtime Labor: Overtime, which made up an average of 10.4 percent of total labor, was heavily concentrated in jobs not using the greatest amounts of regular labor time (table 22). While the range of total and regular direct cost hours on each job was wide, the percentages of the overtime hours used on each job varied even more widely. Marketing had the greatest relative range, from 0.21 to 16.16 percent of all overtime. Hauling had the greatest absolute range with 3.99 to 56.55 percent of all overtime. No range existed in the case of scalding and washing. Washing was done manually at only one plant. Scalding was manual only



Ready-to-cook whole birds are individually wrapped at this plant. Cut-up poultry in individual trays either fresh or frozen is rapidly gaining in popularity.

in one plant and there only for small orders on days when the production line was not running.

Hauling used an average of 22.63 percent of all overtime and was highest among the jobs. Odd hours of hauling and job-lot loads explain that usage. Persons on feeding jobs were second in use of overtime and used 22.18 percent of it. The erratic receipt of poultry and shortage of help at times encouraged management to carry some feeders on overtime. Frequently a night feeder also cleaned the plant. This required overtime pay and was charged to the feeding job. Receiving, packing, and eviscerating and viscera disposal each varied between 10 and 15 percent of total overtime.

Of the individual New York dressing jobs, picking required more overtime than any other, accounting for 8.68 percent of the total overtime.

Materials: The types of materials used in New York dressing poultry may be put in four groups. These are materials for hauling, feeding,

dressing, and cooling and packing.

The cost of materials used directly in New York dressing at 10 plants averaged 2.1 cents per pound, dressed weight basis, or 5.0 percent of the New York dressed cost of chicken, and 22.7 percent of the total cost, if the cost of the live chicken is omitted (table 23). At one plant the materials cost was 3.5 cents per pound; at another they were 35.5 percent of the total New York dressing cost.

Table 23 shows the average and range of costs in cents per pound of the four types of materials used and the percentages which they constitute of the cost of New York dressed chicken and of the cost of New York dressing.

The prices of many supply materials used varied widely among plants (table 24). The prices were not strictly comparable for any item insofar as time, place, and specifications were concerned, but were comparable for use. The great range in the cost of coops, as an example, was due to quality of wood, whether the coops were new or second-hand,

Table 23.—Cost of materials: Average and range in cents per pound and in percentages of New York dressed and New York dressing, 10 plants, 1947-48¹

Material for—	Average	Range ²
Cents per pound		
Hauling-----	0. 703	0. 177-2. 168
Feeding-----	. 615	. 123-1. 347
Dressing-----	. 052	. 031- . 177
Cooling and packing-----	. 693	. 345-1. 155
Total-----	2. 063	. 551-3. 513
Percentages of New York dressed cost		
Hauling-----	1. 673	0. 423-5. 108
Feeding-----	1. 511	. 335-3. 566
Dressing-----	. 126	. 076- . 423
Cooling and packing-----	1. 690	. 850-2. 651
Total-----	5. 000	1. 481-8. 276
Percentages of New York dressing cost		
Hauling-----	7. 273	1. 662-18. 413
Feeding-----	7. 059	1. 966-18. 548
Dressing-----	. 604	. 363- 2. 203
Cooling and packing-----	7. 738	4. 044-11. 809
Total-----	22. 674	9. 447-35. 527

¹ New York dressed weight basis.

² Data for some plants were not usable or available. See tables 8, 9, and 10 for individual plant figures.

number of coops bought per purchase, and the location of dressing plants with respect to coop factories. Turkey coops ranged most widely in price because many were bought second-hand.

Hauling: The average cost of hauling materials exceeded the cost of either feeding, dressing, or cooling and packing materials. Their cost on an average was equal to one-third the cost of all materials. The average cost of materials for hauling was 0.703 cents per pound, New York dressed basis (table 23). The range was from 0.177 to 2.168 cents per pound (table 8). The hauling

materials cost was equal to 1.67 percent of the total New York dressed cost and 7.27 percent of the New York dressing cost (table 23). At plant H the 1.62 cents per pound cost of hauling materials accounted for 18.4 percent of the total dressing cost.⁹

In a later chapter the costs of hauling are discussed as a distinct operation.

Feeding: Feeding materials consisted chiefly of finishing mashers and buttermilk. The cost of the feeding materials averaged 0.615

⁹ For data on individual plants, see tables 8, 9, and 10.

Table 24.—Average prices of 16 supply items purchased by 9 poultry dressing plants, 1947-48

Job and supply item	Average	Range of plant averages
Hauling:		
Coops, turkey, wooden, each-----	\$1. 91	\$0. 660-\$2. 650
Coops, chicken, wooden, each-----	2. 08	1. 480- 2. 930
Feeding:		
Mash, finishing, hundredweight-----	5. 10	4. 685- 5. 620
Buttermilk, semisolid, barrel-----	16. 85	16. 600-17. 100
Grits, hundredweight-----	. 72	. 720- . 720
New York dressing:		
Fingers, picker, each-----	. 16	. 147- . 174
Wax, pound-----	. 11	. 11 - . 11
Adhesive, wax, pound-----	. 11	. 11 - . 11
Hardener, wax, pound-----	. 10	. 10 - . 10
Packing:		
Boxes, bruce, each-----	. 20	. 100- . 366
Barrels, wooden, each-----	. 84	. 500- 1. 175
Covers, barrel, 500 per bale-----	20. 83	18. 600-23. 050
Paper, wax, hundredweight-----	14. 32	11. 320-17. 510
Paper, giblet, thousand sheets-----	1. 53	1. 290- 1. 800
Ice, ton-----	5. 77	3. 500- 9. 000
Containers, individual chicken, cut-up, each-----	. 04	. 034- . 050

cents per pound of New York dressed poultry at 10 plants and ranged from 0.123 to 1.347 cents (table 23). They averaged 7.06 percent of the total cost of New York dressing chickens at the 9 plants that did any feeding for weight gain. Plants B, D, and E had high feeding costs because of the greater amount of feeding done (table 8). At plant B the cost of feeding materials was 18.5 percent of the total dressing cost. Obviously, weight and quality gains offset in part or in whole the costs of feeding materials.¹⁰ Nationally advertised brands of finishing feeds chiefly were used at the feeding stations and showed little price variation not attributable to competition within the feed industry and the general price level.

Dressing: The average cost of dressing materials used was small—

¹⁰ See pages 29 to 33 for discussion of feeding gains.

one-twentieth of a cent per pound. They constituted an average of about one-half of 1 percent of the total dressing cost but as high as 2.2 percent at one plant, plant B (table 10).

The chief New York dressing materials used were picker fingers and waxes. The cost of water was not included among the dressing materials used.

There was little difference among prices of the items of picking supplies because of the small number of items concerned and because so many plants used the same brands. At one plant the sales value of feathers, a byproduct of New York dressing, was greater than the cost of dressing materials used.

Cooling and Packing: Cooling and packing materials at 10 plants had an average cost per pound for New York dressed poultry of 0.69 cents. These materials consisted chiefly

Table 25.—Annual rate of depreciation charged at 11 poultry dressing plants, 1947-48¹

	Plant										
	A	B	C	D	E	F	G	H	J	L	N
	Percent										
Building.....	² 4	5	3	5	² 4	2	10	(⁴)	4	² 8	(⁴)
Office equipment.....	10	10	10	10	10	10	10	-----	10	10	-----
Feed equipment.....	² 20	10	20	³ 20	² 20	² 20	-----	25	10	² 20	-----
New York dressed equipment.....	² 20	20	20	³ 20	² 20	² 20	10	25	10	² 20	20
Wax equipment.....	² 20	10	-----	20	-----	-----	-----	-----	-----	-----	-----
Eviscerating equipment.....	² 20	20	20	-----	² 20	² 20	10	-----	10	² 20	-----
Trucks.....	² 40	33	20	-----	² 67-40	² 40	25	-----	-----	40	-----

¹ Basis of fixed percentage of original cost. Chicken coops usually written off as current cost. Rates for items not given if they differed from rates of major ones.

² Reduced to $\frac{1}{2}$ of this percentage of Jan. 1, 1948.

³ Reduced to $\frac{1}{2}$ of this percentage on Oct. 1, 1947.

⁴ Not available.

of ice, boxes, barrels, barrel covers, paper, and containers for eviscerated poultry. They were the third largest item of direct cost of New York dressing, averaging 7.7 percent with a range from 4.0 to 11.8 percent. Plant D had the highest cost, 1.16 cents, for these materials. This high cost was due in part to the high cost of ice used.

Ice was an item common to all plants but varied greatly in cost importance. The supply in previous years had been so undependable and the price so high that ice-making machinery was installed during the study at three plants to guarantee supplies. The cost of making ice at one plant was estimated to have been \$2.50 per ton for out-of-pocket costs. The average price paid for ice was \$5.77 per ton and was never as low as the estimated cost of making ice at the poultry plant referred to above.

Packing materials, particularly bruce boxes, showed great variability for comparable items in use because of the quality of materials, quantities purchased, and the fact

that three plants had a readily available source of second-hand bruce boxes which enabled them to save about one-half cent per pound on packing materials alone on ice-packed New York dressed poultry.

Indirect Costs

By indirect costs are here meant those which are incurred for more than one operation, do not change in total amount as the volume varies, and are not traceable directly to specific products or operations. In this report two types of indirect or overhead costs are discussed. These are processing overhead costs and general and administrative costs. The indirect costs associated with and limited to physical procurement and plant operation are here considered as indirect processing costs. They are not association-wide but department-wide and broader than individual dressing and plant jobs or operations. Examples of indirect processing costs are depreciation and repairs of dressing plant, machinery, and hauling equipment;

dressing plant foreman's salary; and insurance on machinery.

Differentiation between general and processing overhead costs was of necessity often arbitrary because the absence of separate meters prevented actual allocation. For example, fuel was used for general heating and for plant steam and hot water. That used for general heating should have been charged to general and administrative cost and that used for steam for the scalding should not have been charged to indirect plant cost but as a direct cost of scalding. Fuel was also used for singeing and for plant cleanup and was therefore chargeable to direct costs and overhead costs respectively. As a compromise, such an item as fuel was listed as either a general or indirect plant cost as the use indicated.

Variability in either general, plant, or total overhead items in cents per pound of New York dressed or per pound of eviscerated product is due in part to division of costs into the groups, to bookkeeping methods in the cooperatives, and to the degree of overhead allocation depending upon the other activities of the association.

The average indirect plant cost was 0.425 cents per pound of New York dressed poultry with a low of 0.171 cents at plant J and a high of 0.717 cents at plant F (table 8). These costs constituted 4.7 percent of the total dressing cost (table 10).

The depreciation rates used for the part of the building used for dressing plant operation, and for the plant and processing machinery and equipment are shown in table 25.

The rates of depreciation charged for each item did not vary much.

The rates of pay of the dressing plant foremen varied considerably. The range was from \$20 to \$70 a week for a 40-hour week (table 18). Some foremen were employed on an hourly and others on a weekly basis.

Non-Plant Costs

Costs other than assembling and processing costs, both direct and indirect, were (1) selling and (2) general and administrative costs.

Selling

The average selling cost at 10 plants was one-third of a cent per pound. There was a range from an insignificantly small cost at several plants to 1.36 cents per pound at plant D (table 8). The selling cost was 3.7 percent of the total New York dressing cost at 8 plants but was as high as 13.9 percent at plant D.

Some of the variability in the selling costs per pound may be the result of practices of cost allocation used in the associations which had more than one department. In other instances the different sales arrangements affected the amount of marketing effort required of the association personnel. At some associations practically no sales effort was necessary for the plant personnel. Where selling costs were low it was due partly to the fact that the plant manager was also actively engaged in selling poultry. Only where the general manager was not engaged in other purchasing or marketing activities did he do the poultry marketing.

General and Administrative

Items of indirect non-plant cost included in the general and administrative costs were those which were association-wide and were not confined to any one department, operation, or job. Examples of such costs were the salaries and expenses of management, general office salaries and expenses, taxes, interest, and building depreciation. When associations were engaged in other activities than poultry handling, it was necessary to allocate the overall costs on an equitably proportionate basis.

In cents per pound, general and administrative non-plant costs, separate from the indirect plant costs discussed above, averaged 1.01 cents per pound of dressed chickens at 10 plants (table 8). The range was wide, from 0.55 to 2.09 cents. It constituted an average of 11.1 percent of all New York dressing costs and ranged from a low of 6.4 percent at plant E to a high of 19.6 percent at plant N.

Wide differences are found in table 8 in comparing the indirect plant cost with the indirect general and administrative non-plant cost. In plants A and E they are nearly equal but in plant N the non-plant overhead cost is seven times as great as the plant overhead cost.

Because of their importance, three cost factors in general and administrative costs are deserving of further discussion. They are floor space, salaries and wages, and depreciation.

Floor Space: The area and portion of total floor space used for general and administrative purposes and for

processing operations was determined at each plant. The general and administrative cost at each plant was then calculated in part from this. An average of 3,933 square feet, with a range from 904 to 20,928, was charged at the 15 plants for non-plant overhead on poultry (table 2). Plant overhead required an average of 523 square feet. The floor space for non-processing purposes increased with plant size.

In terms of percentages, total general and administrative space in 15 plants averaged 19.8 percent of total floor space and varied from 9 to 31 percent. Total processing overhead space in 10 plants averaged 2.6 percent, with a range of 1 to 4 percent. Total direct cost space in the 15 plants averaged 72.4 percent and had the comparatively narrow range of from 62 to 83 percent of the total floor space.

Salaries: There were wide ranges in the weekly salaries of the managers and of the clerical help.

Plants B, C, D, G, and J had the highest salaries for the managers of the individual plants (table 18). The salaries on a weekly basis ranged from a low of \$44 at plant I, a medium-sized plant, to a high of \$154 at plant B, one of the two largest plants.

The weekly wage of clerical help ranged from \$24 to \$70 for a 40-hour week. The range was high within many plants. In plant F, for instance, it was from \$40 to \$70.

In several plants some of the clerical and managerial cost was charged to other operations so that

poultry slaughtering probably did not absorb its proportionate share of these costs.

Depreciation: The rates of depreciation used in figuring overhead costs showed some variation among plants for most items (table 25). Five of the plants charged depreciation rates during the fiscal year in an effort to reflect the revised opinions of the serviceable life of plant and equipment.

No reserves against the obsolescence of present buildings and equipment were set up, except insofar as they may have been considered in setting the rates shown. Depreciation rates on buildings varied from 2 to 10 percent. Both the

highest and lowest rates were used for brick buildings especially built for poultry slaughtering. Wooden frame buildings were depreciated at 2½ to 8 percent with 4 and 5 percent the most common rates.

Office equipment was depreciated at 10 percent per year by all plants having separate offices. Efforts to co-ordinate these rates with use, inadequacy, and obsolescence were not made.

Trucks and automobile equipment were depreciated at 20 to 67 percent with 40 percent the most common rate. Feeding station and dressing equipment was most commonly depreciated at 10 percent but ranged up to 25 percent at plant H.

New York Dressing Cost: Turkeys

AS stated earlier in this report, most of the cost data in this study pertained to New York dressing of chickens—and more particularly young chickens of the commercial broiler and fryer types.

At only two of the plants, here re-coded and designated as plants Q and R, were enough turkeys dressed to warrant separate study. Although the volume of turkeys handled by these plants during the period of study was nearly 3 million pounds, it should be noted that the data given below were limited to this relatively small volume and to the operations of two plants only. The data are therefore not as satisfactory as that given above on New York dressing of chickens.

The costs of New York dressing turkeys—at plants Q and R—are

here discussed more briefly than the more detailed discussion of New York dressing of chickens.

The total New York dressing costs were 7.84 and 7.33 cents per pound, New York dressed weight basis, at the two plants (table 26). This was equal to an average of 17.18 percent of the cost of the New York dressed product. The largest single item of dressing cost was shrinkage from the farm to dressed weight, based on an average cost of 36.55 cents per pound for live turkeys at the farm. This cost, 3.84 cents, averaged 50.55 percent of the total dressing cost. It was 46.00 percent at plant R and 55.12 percent at plant Q—due chiefly to heavier shrinkage at plant Q.

Labor cost was second, constitut-

ing about a fourth of the dressing costs. Packing materials costs were next, about 9 percent of the total.

Of the remaining costs, plant and general overhead were the most important. (Figure 8.)

Figure 8.—Costs in cents per pound of New York dressing turkeys in 2 plants, 1947–48.

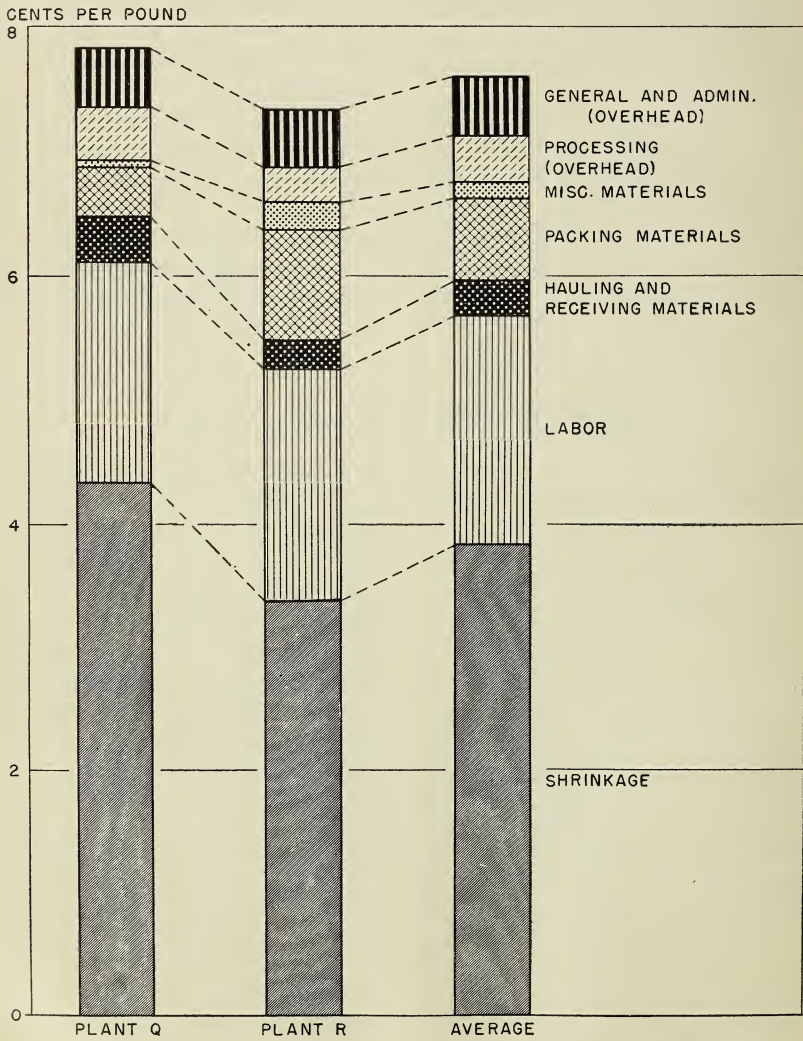


Table 26.—Cost of New York dressed turkeys in cents per pound and in percentages of total dressed and dressing costs, 2 plants 1947-48

Cost item	Plant			Average	Plant			Average	Plant			Average	
	Q	R	Average		Q	R	Average		Q	R			
	Cents per pound				Percentage of New York dressed cost				Percentage of New York dressing cost				
Plant:													
Direct:													
Raw material: Live turkeys	36.205	36.904	36.554		82.20	83.44	82.82		0	0	0	0	
Dressing:													
Shrinkage ¹	4.320	3.369	3.844		9.81	7.62	8.71		55.12	45.99	50.55		
Labor	1.788	1.875	1.832		4.06	4.24	4.15		22.82	25.60	24.21		
Materials:													
Hauling and receiving	.364	.233	.299		.82	.52	.67		4.64	3.18	3.91		
Packing	.396	.893	.645		.90	2.02	1.46		5.05	12.19	8.62		
Other	.050	.218	.134		.12	.49	.31		.64	2.98	1.81		
Total direct cost	43.123	43.492	43.308		97.91	98.33	98.12		88.27	89.94	89.10		
Indirect (overhead)	.451	.280	.365		1.03	.63	.83		5.76	3.82	4.79		
Total plant cost	43.574	43.772	43.673		98.94	98.96	98.95		94.03	93.76	93.89		
Other: General and administrative (overhead)	.468	.457	.463		1.06	1.04	1.05		5.97	6.24	6.11		
Grand total cost	44.042	44.229	44.136		100.00	100.00	100.00		100.00	100.00	100.00		
Grand total cost exclusive of raw material	7.837	7.325	7.582		17.80	16.56	17.18		100.00	100.00	100.00		

¹ Total cost of shrinkage from farm weight to New York dressed weight.

¹ Eviscerated weight basis.
² Adjusted from cost at farm to New York dressed basis since all poultry at plants V and W was eviscerated directly from New York dressing line and no New York dressed weights or costs were available. New York dressing cost and eviscerating shrinkage based on averages of other plants studied.

² Adjusted from cost at farm to New York dressed basis since all poultry at plants V and W was eviscerated directly from New York dressing line and no New York dressed weights or costs were available. New York dressing cost and eviscerating shrinkage based on averages of other plants studied.

Eviscerating Cost: Chickens

COSTS of eviscerating chickens were obtained at eight plants. Records on eviscerating costs at one of these plants did not provide satisfactory information. For this reason they were not included. The analysis and comparison was therefore limited to seven plants which eviscerated 13,500,000 pounds, eviscerated weight basis, of chickens during the period of the study, May 1947 to May 1948.

These seven plants were given new code letters to disguise their identities and put into two groups, IV and V, for the purposes of this report. The four plants S, T, U, and Y, comprising group IV, were essentially broiler plants. The other three plants, V, W, and X were operated by associations whose chief function was handling farm supplies, miscellaneous farm products, or eggs. For the most part, group V plants were from the New York dressing group II but group IV plants were from New York dressing groups I, II, and III.

The eviscerating costs were calculated on the basis of the eviscerated weight, starting with New York dressed birds. At two plants, V and W, the poultry was eviscerated directly from the New York dressing line so no New York dressed weights were available at these plants before the evisceration operation. The cost of the New York dressed product in these instances was calculated from the farm prices paid, adjusted for New York dressing cost and shrinkages based on the averages found in this study.

In this study no practical way was found of separating costs of drawing, full eviscerating, and cutting up. Obviously, if dressing yield were reduced in a plant by using a more careful trimming or more complete dressing style than that used in another, the style with least yield would have the highest cost per pound.

The average cost of New York dressed chickens to be put into eviscerated form was 39.56 cents per pound with a range from 36.71 to 41.12 cents per pound—a difference of 4.41 cents (table 27). This raw material cost was equal to an average of 69.63 percent of the eviscerated cost (table 28). A rather wide range existed between plants for this item. Plant U was lowest with 63.09 percent and plant Y, in the same group, was highest with 76.65 percent.

The cost of the eviscerating operation, that is the cost of the eviscerated product less the cost of the New York dressed chicken, averaged 17.2 cents at the 7 plants (figure 9). A difference of 12.28 cents per pound existed between plants Y and U, both in group IV.

Shrinkage Cost

Eviscerating shrinkage was the largest cost item other than the cost of the New York dressed product. It averaged 11 cents at the seven plants with the wide range of from 6.73 to 13.64 cents per pound (table 27). This shrinkage cost made up an average of 19.35 percent of the total eviscerated cost

Table 28.—Costs of eviscerated chickens in percentages of total cost at 7 plants, 1947-48

Cost item	Group and plant										7 plants		
	Group IV					Group V							
	Plant S	Plant T	Plant U	Plant Y	Average	Plant V	Plant W	Plant X	Average	Average	Range	Amount of range	
Plant cost:													
Direct:													
Rectifiers													
Material: New York dressed chickens	65.450	73.382	63.092	76.652	69.138	70.648	65.931	75.348	70.294	69.626	63.092- 76.652	13.560	
Eviscerating													
Shrinkage	21.982	19.246	20.926	13.341	19.133	19.781	18.461	21.023	19.660	19.354	13.341- 21.082	8.541	
Labor	5.905	2.869	6.813	4.234	5.074	3.716	7.356	7.963	4.255	4.727	3.716- 7.963	6.577	
Materials: Packing	3.969	1.037	3.755	1.454	2.654	2.189	1.776	1.794	1.924	2.346	1.037- 3.969	2.932	
Ice and freezer	.746	.924	.680	.680	.699	.426	.671	.271	.470	.604	.271- .924	.653	
Freight out	.234	1.273	-----	1.057	.597	.411	.111	-----	.182	.422	.111- 1.273	1.162	
Total direct cost	98.286	98.277	95.266	97.682	97.295	97.171	94.316	99.425	96.785	97.079	94.316- 99.425	5.109	
Indirect (overhead)	.776	.376	.964	.718	.720	.226	1.014	.111	.470	.619	.111- 1.014	.903	
Total plant cost	99.062	98.653	96.230	98.400	98.015	97.397	95.330	99.536	97.264	97.698	95.330- 99.536	4.206	
General and administrative (overhead)	.938	1.347	3.770	1.600	1.985	2.693	4.670	.464	2.736	2.302	.464- 3.770	3.306	
Total gross cost	100.000	100.000	100.000	100.000	100.000	100.000	100.000	100.000	100.000	100.000	100.000-100.000	0	
Less: Sales inedible viscera	.293	.276	-----	-----	.141	-----	-----	.205	.059	.107	.141- .293	.152	
Total net cost	99.707	99.724	100.000	100.000	99.859	100.000	100.000	99.795	99.941	99.893	99.707- 99.859	.152	
Total net cost less cost of raw material	34.257	26.342	36.908	23.348	30.721	29.352	34.069	24.447	29.647	30.267	24.446- 36.912	12.466	

Table 29.—Costs of eviscerating chickens in percentages of total cost at 7 plants, 1947-48

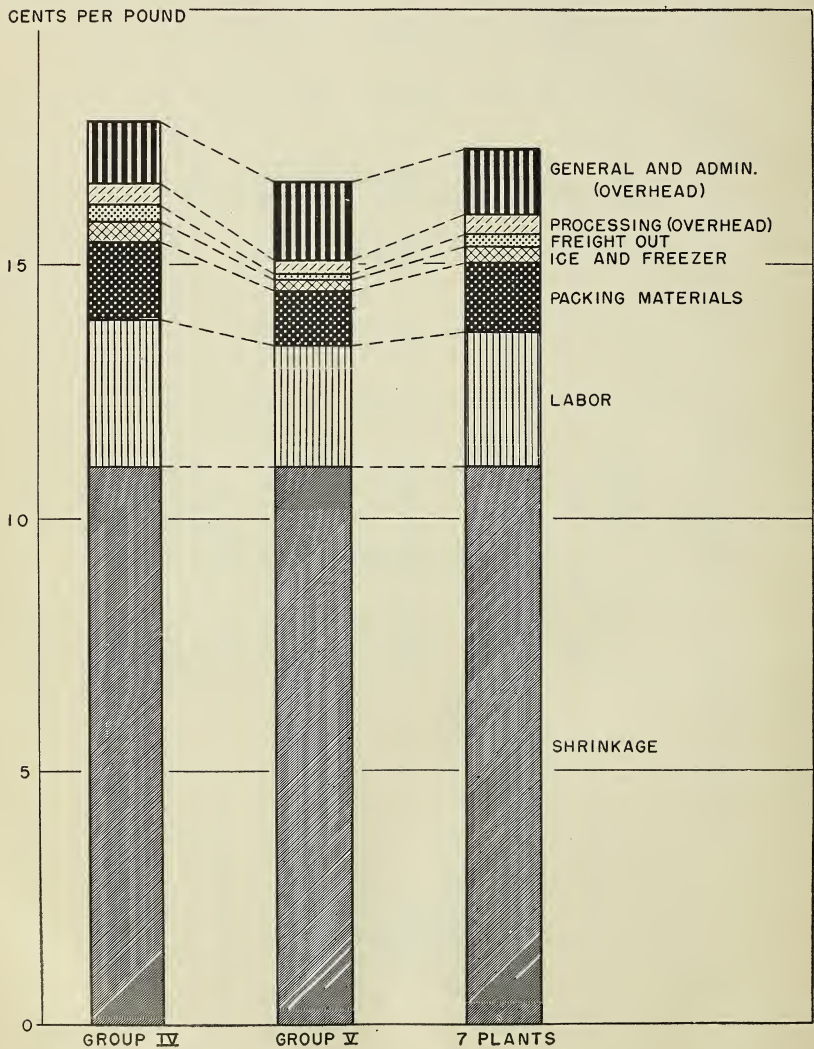
Cost item	Group and plant										7 plants
	Group IV					Group V					
	Plant S	Plant T	Plant U	Plant Y	Average	Plant V	Plant W	Plant X	Average	Range	
	Percent										
Plant cost:											
Direct:											
Raw material: New York dressed chickens	0	0	0	0	0	0	0	0	0	0	0
Eviscerating:											
Shrinkage	63.625	72.308	56.695	57.143	61.996	67.392	54.186	85.279	66.181	63.720	54.186-85.279
Labor	17.091	10.777	18.456	18.218	16.440	12.661	21.623	4.013	14.324	15.562	4.013-21.623
Materials: Packing	11.487	3.895	10.172	6.226	8.600	7.437	5.214	7.277	6.476	7.723	3.895-11.487
Ice and freezer	2.158	1.766	1.841	3.958	2.266	1.453	1.968	1.099	1.583	1.987	1.099-3.958
Freight out	.679	4.781		4.527	1.933	1.400	.326		.614	1.390	.326-4.781
Total direct cost	95.040	93.527	87.164	90.072	91.235	90.363	83.317	97.668	89.178	90.382	83.317-97.668
Indirect (overhead)	2.246	1.412	2.610	3.074	2.333	.770	2.976	.450	1.613	2.039	.450-3.074
Total plant cost	97.286	94.939	89.774	93.146	93.568	91.133	86.293	98.118	90.791	92.421	86.293-98.118
General and administrative (overhead)	2.714	5.061	10.226	6.854	6.432	8.867	13.707	1.882	9.209	7.579	1.882-13.707
Total gross cost	100.000	100.000	100.000	100.000	100.000	100.000	100.000	100.000	100.000	100.000	100.000-100.000
Less: Sales of inedible viscera	.849	1.037	0	0	.456	0	0	.833	.199	.353	.833-1.037
Total net eviscerating cost	99.151	98.963	100.000	100.000	99.544	100.000	100.000	99.167	99.801	99.647	98.963-100.000
Total	100.000	100.000	100.000	100.000	100.000	100.000	100.000	100.000	100.000	100.000	100.000-100.000
											0

and ranged from 13.34 to 21.98 percent (table 28). As a percentage of the eviscerating cost, it averaged 63.72 percent with a range from 54.19 to 85.28 percent (table 29).

Rate of Shrink: Much of the range in the eviscerating cost was appar-

ently due to the rate of evisceration shrink. Accurate and comparable figures on the percentage of shrink from New York dressed to eviscerated were difficult to obtain. Some of the poultry included in the eviscerated volume was not fully

Figure 9.—Costs in cents per pound of eviscerating chickens, 7 plants, 1947-48.



ready-to-cook. On the other hand, some included was cut-up poultry. It was not possible in some instances to include only poultry which was eviscerated in conformity with the accepted definition of eviscerated poultry. These differences were partly responsible for the variations in the evisceration shrinkage figures obtained.

Plant S did the most business in cut-up poultry and had the highest evisceration shrinkage with an average of 25.1 percent.¹¹ Plant U, with a shrinkage of 23.1 percent, sold cut-up and whole eviscerated poultry. The other plants did very little business in cut-up poultry and had a range of 20.3 percent to 21.8 percent for the months they operated. Their total dollar sales were more largely comprised of fowl than were those of the plants with the higher evisceration shrinkage.

The percentages of poultry that were eviscerated while still warm from body heat varied greatly. Almost all the poultry drawn or eviscerated at plants T, W, and Y was eviscerated warm because the work was done while the poultry was on the New York dressing shackles. Plant S eviscerated warm 8.29 percent of its eviscerated turkeys and 10.03 percent of its eviscerated chickens. Almost all the poultry eviscerated at plants U and X was partially chilled or cold when eviscerated. First it was New York dressed, then selected for evisceration, and taken from chill-

ing vats of ice water, ice-packed barrels, or ice-packed boxes.

The average loss in weight of chickens from New York dressed to eviscerated weight was 22.2 percent for five of the seven plants from which satisfactory evisceration data were obtained (table 30). On a monthly basis there was a range of shrinkage among the 5 plants from 14.3 to 28.4 percent. Both extremes were in plant X.

During one 5-month period, a plant, not included in the table, marketed drawn birds with head and feet left on and only inedible viscera removed. The shrinkage of those birds varied from 11.0 percent to 12.6 percent from New York dressed to drawn weight.

Evisceration shrinkage data were available for the full 12-month period at only plants S and T. An average of the monthly percentages of these two plants, which eviscerated 7,900,000 pounds of New York dressed poultry during the period, showed a small variation in shrinkage over the 12 months.

Some of the inter-plant seasonal variations were due to the varying mixtures, grades, and sizes of fowl and broilers that were eviscerated during the different months. Mature and fat birds showed a lower evisceration shrink than young, light, and thin birds. The difference in shrinkage between plants S and T was due chiefly to (1) a larger percentage of the chicken dressed at plant S being of the lighter, less fat, broiler type, and (2) more of the birds eviscerated at plant T, in addition to being fatter and more mature, were drawn rather than completely eviscerated.

¹¹ In order not to disclose plant identities, new code letters were assigned to the plants for (1) chicken evisceration and (2) turkey evisceration operations.

Data on poultry condemned during evisceration were not available by weight in the plants. The records of one plant eviscerating broilers primarily showed 0.53 percent of the number eviscerated to have been condemned by the Government inspector.

Other Direct Costs. Direct labor, costing 2.69 cents, was the third largest cost item and averaged 4.73 percent of the eviscerated cost with a range from 0.99 to 7.37. In terms of eviscerating cost, direct labor accounted for an average of 15.56 percent of the total at the 7 plants. A wide range existed in the percentages between the plants with the extremes in this cost percentage, plants X and W with 4.01 and 21.62 percent respectively.

Packing materials constituted the next largest item of cost percentage-

wise and averaged 7.72 percent of the eviscerating cost. Freight out of the plants averaged 1.39 percent of net costs other than chicken. Ice and freezer cost averaged one-third of a cent per pound of eviscerated chicken but ran as high as 0.47 cents. Direct processing costs averaged 97.08 percent of the cost of eviscerated chicken and 90.38 percent of the eviscerating cost.

Indirect Costs. Indirect plant or processing cost, such as plant management, repair, and maintenance, averaged about one-third of a cent per pound. General and administrative overhead ran from 0.23 to 2.86 cents per pound with an average of 1.31 cents. In terms of percentage of eviscerating cost, general and administrative overhead were important. They averaged 7.58 percent and ranged as high as 13.71 percent.

Table 30.—Evisceration shrinkage: Percentages of shrinkage of chickens from New York dressed to eviscerated at five plants, by months, 1947-48

Year and month	Plant ¹					Average of plant months
	S	T	U	X	Y	
	Percent					
1947:						
May	24.7	21.1	-----	-----	-----	22.9
June	24.9	20.3	-----	21.5	-----	22.6
July	25.1	18.0	-----	27.2	-----	23.4
August	25.1	20.1	-----	20.5	-----	21.9
September	25.9	19.1	-----	15.5	-----	20.2
October	23.8	20.0	-----	14.3	18.3	19.1
November	24.6	20.8	-----	23.7	20.4	22.4
December	26.2	19.9	-----	28.4	19.9	23.6
1948:						
January	24.9	21.7	22.4	23.4	23.6	23.2
February	25.4	22.1	22.7	-----	20.4	22.7
March	25.2	21.2	24.3	-----	19.1	22.5
April	25.3	21.5	-----	-----	-----	23.4
Average	25.1	20.5	23.1	21.8	20.3	22.2

¹ New code letters used in order to avoid disclosing plant identities.



A variety of cooling tanks and vats are used to remove the animal heat from the poultry after dressing. Although some plants still air or dry cool, most plants use the wet cooling method with ice and water and compressed-air agitation for rapid cooling.

Part of the variability in the eviscerating cost figures is apparently due to the different methods of handling and cost determination among the plants. Some of the variability was obviously due to the prices and kinds of poultry slaughtered. The remainder came about from management, volume, and other factors.

By-product Utilization

Accurate data regarding utilization of by-products of evisceration were not available. Feathers, crop-pings, ventings, blood, and manure from the New York dressing operations of the two plants, V and W, which drew poultry on the New York dressing line were disposed of as fertilizer, feed, and sewage at as nearly no cost to the plant as was possible. The sales of inedible viscera gave an average return of 0.14 cents per pound, based on eviscerated weight, at the three

plants that sold inedible viscera for gain (table 27).

Inedible viscera was given to hog feeders, sold to renderers, or sold to farmers raising meat-eating specialty animals such as mink, fox, or fish. Inquiries among hog growers who fed chicken viscera to their hogs that varied in size from baby pigs to market hogs indicated that one could keep one hog for every 20 chickens eviscerated in a day. Provision, however, had to be made for supplemental feeding with garbage or grain during times when the chicken eviscerating plants were not in operation and for final finishing of the market hogs. Losses from disease and parasites were mentioned as ever-present risks.

Satisfactory figures on the sales of eggs and egg yolks as by-products were not available. Edible viscera, eggs, egg yolks, and fat were available for sale. In the plants

that slaughtered relatively few fowl, the eggs that were laid in feeding stations or taken from hens in the New York dressing process were given to the employees. One plant that eviscerated large amounts of drawn fowl for soup making reported selling at least 30 dozen shell eggs daily during the summer and fall in addition to an occasional 30-pound can of frozen yolks. Edible fat was often left on the carcasses, but frequently salvaged and sold in packages. No salvage was attempted on turkey eggs, which were given to the employees.

Eviscerating Packed Chickens

Several plants which obtained some poultry packed elsewhere to eviscerate had to repin it first. The average costs per pound, eviscerated weight, of the repinning labor and materials used in this operation were as follows:

	Cents
Repinning labor.....	0.51
Repacking labor.....	.47
Boxes and wrappers.....	2.51
Barrels and containers.....	.88
Total.....	4.37

The repacking and material costs above are not specific to the reworking operations since they occur in the regular evisceration operation. The repacking cost was 0.47 cents per eviscerated pound yield from New York dressed poultry bought in packages other than those in which the eviscerated product was shipped out. Costs of barrels and containers averaged 0.88 cents per eviscerated pound. Use of second-hand packaging materials greatly altered costs between plants. Boxes and wrappers for eviscerated poultry varied but little between plants and had an average cost of 2.51 cents per pound of eviscerated poultry.

Eviscerating Cost: Turkeys

ONLY one plant eviscerated a sufficient volume of turkeys to warrant a cost analysis. This plant handled about 1½ million pounds, eviscerated weight. At this plant the farm price of turkeys averaged 36.2 cents per pound, live weight. The cost of those New York dressed for evisceration was 46.21 cents. This cost of the New York dressed turkeys constituted 76.6 percent of the total net eviscerated cost (table 31). The next most important cost was shrinkage cost which amounted to 8.9 cents per pound or 14.8 percent of the total. Turkey evisceration shrinkages from New York dressed to eviscerated weight were available for 7 months. They varied month-to-month from 11.6 per-

cent to 18.4 percent with an average of 16.0 percent for the period. No accurate data on eviscerated turkey condemnations were available. Direct labor was the only other important individual cost item, costing 3.12 cents per pound or 5.18 percent of the total eviscerated cost.

The gross cost of eviscerating was 14.14 cents per pound. The sale of inedible viscera reduced this cost to 14.0 cents. The total spread between the price per pound at the farm, live basis, to the eviscerated cost was 24 cents. In other words, the New York dressed cost was 27.6 percent higher than the farm live price and the eviscerated cost was 66.3 percent higher than the farm live price.

Table 31.—Costs of eviscerating turkeys in cents per pound, in percentages of total cost, and in percentages of eviscerating cost at one plant, 1947–48

Cost item	Cost in—		
	Cents per pound	Percentage of eviscerated cost	Percentage of eviscerating cost
Plant cost:			
Direct:			
Raw material: New York dressed turkeys	46.209	76.565	-----
Eviscerating:			
Shrinkage	8.924	14.787	63.095
Labor	3.124	5.176	22.087
Materials:			
Boxes and containers	.874	1.448	6.179
Barrels and wrappers	.073	.121	.516
Ice and freezers	.480	.795	3.394
Government Inspection	.143	.237	1.011
Cartage	.034	.056	.240
Total direct	59.861	99.185	96.522
Indirect (overhead)	0	0	-----
Total plant cost	59.861	99.185	96.522
General and administrative (overhead)	.492	.815	3.478
Total gross cost	60.353	100.000	100.000
Less: Sales inedible viscera	.148	.245	1.046
Total net cost	60.205	99.755	98.954
Total net cost less cost of raw material	13.966	23.190	-----

Hauling Costs

ALTHOUGH the several distinct jobs or operations in the handling of poultry in its processing were not studied separately as has been done in two studies of egg-handling costs, several of the operations have been studied in some detail and comparatively.¹² Among these are feeding, hauling, and selling. Feeding and selling have been discussed in the section on the costs of New York dressing.

Much interest has been expressed in hauling live poultry from the farm to the dressing plant. This interest usually arises from the need

of the associations to decide whether to hire others to haul the poultry or to operate their own trucks. The decision is usually based on relative costs.

The study of hauling costs included all pertinent direct costs, and hauling and general overhead costs. Direct labor costs were all

¹² Bradford, Henry W., Ratcliffe, Harry E., Scanlan, John J., *Costs and Labor Efficiency of Specialized Egg Marketing Cooperatives in the Northeast*. U. S. Farm Credit Admin., Misc. Rpt. 158, 42 pp. 1952.

Ratcliffe, Harry E., Bradford, Henry W., Scanlan, John J., *Costs of Handling Eggs by Selected Cooperatives in the North Central States*. U. S. Farm Credit Admin., Misc., Rpt. 162, 47 pp. 1952.

Table 32.—Farm to plant costs of hauling live chickens and turkeys, in cents per pound and in percentages of total hauling costs, 7 dressing plants, 12-month period, 1947-48

Item	Plant A		Plant B		Plant C		Plant D		Plant E		Plant F		Plant L		Average ¹	
	Cents	Per-cent	Cents	Per-cent	Cents	Per-cent	Cents	Per-cent	Cents	Per-cent	Cents	Per-cent	Cents	Per-cent	Cents	Per-cent
Hauling costs:																
Direct:																
Labor	0.29	40.3	0.10	16.4			0.18	16.2	0.38	47.5	0.20	7.4	0.34	34.7	0.21	19.82
Buying expense					0.07	14.3	.08	7.2							.02	1.89
Contract hauling charges							.79	71.2								
Truck and coop expense	.30	41.7	.10	16.4	.08	16.3	.04	3.6	.24	30.0	1.93	71.8	.43	43.9	.45	42.45
Total direct	.59	82.0	.40	65.6	.43	87.8	1.09	98.2	.62	77.5	2.13	79.2	.77	78.6	.86	81.14
Indirect: Hauling overhead	.06	8.3	.05	8.2	.01	2.0	.01	0.9	.08	10.0	.18	6.7	.09	9.2	.07	6.60
Total hauling cost	.65	90.3	.45	73.8	.44	89.8	1.10	99.1	.70	87.5	2.31	85.9	.86	87.8	.93	87.74
General and administrative (overhead)	.07	9.7	.16	26.2	.05	10.2	.01	0.9	.10	12.5	.38	14.1	.12	12.2	.13	12.26
Total cost	.72	100.0	.61	100.0	.49	100.0	1.11	100.0	.80	100.0	2.69	100.0	.98	100.0	1.06	100.00

¹ Averages are based on total number of plants.

labor costs directly chargeable to the hauling operation, including catching and hauling to the plant but not including unloading labor, which was charged to receiving.

The unweighted average cost of hauling 37.6 million pounds of live chickens and turkeys from farms to seven plants was 1.06 cents per pound with a range from 0.49 cents to 2.69 cents (table 32). Plant C, with low overhead costs and handling a large volume of poultry, largely broilers, from a concentrated, nearby area, chiefly on a contract basis, had the lowest cost, 0.49 cents. Plant F had the highest costs 2.69 cents, due to hauling a small volume of mixed poultry from relatively small flocks from a wide area.

Total plant and general overhead costs for the seven plants averaged 0.20 cents per pound and 18.86 percent of the total costs. At plant D the overhead costs constituted only 1.8 percent of the total hauling cost but at plant B they constituted 34.4 percent.

Truck and coop expenses were generally the most important direct costs. At plants B, C, and D some or all of the poultry was hauled by contract haulers. At the 4 plants where the associations did all of their own hauling, the truck and coop expenses constituted 46.9 percent of the total. The plant with the highest cost for this item was plant F with a truck and coop cost of 1.93 cents a pound. This high cost was due to light volume and much idle truck time.

At plant D the poultry was hauled by contract haulers at an average rate of 0.79 cents a pound

but the association furnished some of the catching labor. At plants B and C some of the hauling was done by contract haulers and some by the association. The contract hauling charges given in table 32 for these plants are averages based on total volume. They are not the per pound hauling rates.

Direct labor constituted the second greatest average cost, if contract hauling fees were considered as equivalent to all direct costs for the poultry hauled. Direct labor varied from 7.4 to 47.5 percent, with an average of 22.3 percent of the total cost at six plants.

Buying expense, composed of buyer's salary and travel, averaged 2.70 percent of costs at the three plants concerned.

At plants H and K the hauling was done by commercial haulers at negotiated rates paid by the producers and not by the association. At plant H, 35 cents a coop was charged for distances up to 30 miles and 45 cents for greater distances. At plant K, the charge was based upon the number of coops and whether the distance was less or more than 35 miles. The rates in cents per coop were as follows:

Distance	Number of coops			
	1	2 to 10	11 to 30	31 and over
Cents per pound				
Less than 35 miles --	50	28	21	21
More than 35 miles --	-----	37	32	27

Where the associations did their own hauling the investment in trucks and automobiles ranged from \$1,700 to \$17,000 (table 4). In

most instances automobiles made up only a small part of this investment. There was a range in investment in hauling or collecting coops from \$500 to \$5,400.

Hauling Live Poultry, Plant to Market

One association kept records of the costs, other than shrinkage, of hauling live poultry 210 miles to a terminal market by truck. The average costs as shown in table 33 include actual operating costs, with estimates of the costs for overhead, depreciation on trucks and coops, and wear on tires. The total round-trip cost for hauling a capacity load of from 10,000 to 11,000 pounds of live poultry was \$48.63, or about half a cent per pound. On less than a capacity load the per pound cost would be higher since most of the

hauling costs are indirect costs. On a per mile basis the cost of operating the truck was 11.6 cents for a round-trip of 420 miles.

Table 33.—Costs of hauling 10,000 to 11,000 pounds of live poultry 210 miles from plant to terminal market, 1948

Item	Amount
Wages of driver ¹ -----	\$11.40
Depreciation, trucks and coops ² -----	10.00
Meals and lodging-----	9.94
Gasoline and oil-----	9.50
Tire wear-----	1.00
Tips-----	3.21
Toll fees-----	.90
Overhead ² -----	2.00
Miscellaneous-----	.68
Total-----	48.63

¹ At regular rate plus overtime at the rate of \$0.95 per hour since all driving was done by one driver.

² Estimated.

Some Factors Affecting Costs

THE chief purpose of this report is to present figures on costs of handling poultry through cooperative processing plants. Little analysis has been made of data obtained to determine and to measure the factors which affect these costs. The factored analysis phase is the second phase in a study of this type. The application of the findings, following the determination of the factors which affect or determine costs, is the third and last step.

Inasmuch as no further analysis of the data obtained in this study is contemplated, several of the factors affecting costs which became apparent during the study are discussed

briefly here. These are (1) overgrading, (2) the labor situation, and (3) plant utilization.

Overgrading

The payment of prices for poultry on a quality basis for a quality not warranted by the poultry received may result in an overpayment for this poultry. That is, the poultry purchased, based on the quality turnout of the dressed product, will not grade as high as the price paid warrants. This may be termed overgrading. While overgrading may not result in a direct cost of processing it is a direct cost in the sense that it is a determinant in the necessary spread between the live and dressed prices.

Table 34.—Net percentages of total monthly production of one association overgraded into grade A ¹

Year and month	Percentage of Grade A, should be—		Total percentage overgraded into grade A
	Grade B	Grade C	
1947:			
June.....	4. 02	0. 67	4. 69
July.....	2. 20	. 14	2. 34
August.....	6. 40	. 52	6. 92
September.....	8. 16	. 56	8. 72
October.....	3. 61	. 35	3. 96
November.....	6. 77	1. 31	8. 08
December.....	4. 66	. 79	5. 45
1948:			
January.....	4. 72	. 37	5. 09
February.....	5. 00	. 95	5. 95
March.....	1. 40	. 37	1. 77
April.....	5. 84	1. 83	7. 67
May.....	5. 28	1. 46	6. 74
Average ²	4. 84	. 78	5. 62
Percentage.....	86. 1	13. 9	100. 00

¹ Net percentages given are differences between the overgradings and undergradings. Data from association H.

² Unweighted monthly average.

In a cooperative operating on a pooling basis in which the paying prices are dependent upon the net selling prices and final producer payment is deferred until this net selling price has been ascertained, the result of overgrading will be borne by all of the producers in the pool. The result is that other producers make up for the excess price paid to producers whose poultry is overgraded and therefore overpriced. Under such a pooling system the cost of overgrading is borne by all the producers, although it may not show as an association cost.

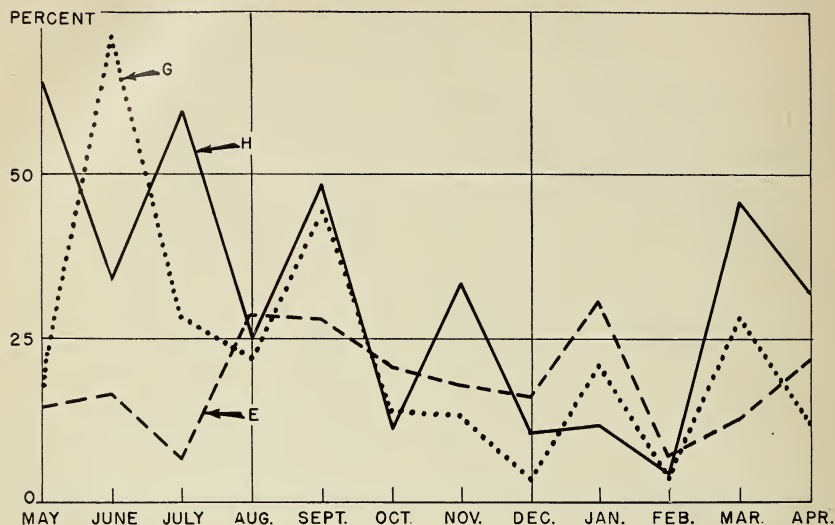
Private buyers, on the other hand, may unduly discount the quality of the birds by undergrading in order to obtain them at a lower price and thus increase their profit margin. In a cooperative association of the pool type the final

paying price is not determined by the initial or advance price and there is no reason for undergrading or underpaying.

None of the plants in this study operated on a short-time pooling basis. In effect, they operated on a yearly pool basis. The associations paid prices for the poultry based upon the market quotations or upon the prevailing or competitive prices. Later, several of the associations attempted to operate on weekly or other short-time pools with the live paying price set at a definite margin under the dressed price quotation.

Data on the extent of overgrading for a period of several months were obtained at only one plant. The average net percentage of overgrading for a 12-month period, June 1947 to May 1948, inclusive, was 5.6 percent with a monthly range from

Figure 10.—Percentage turnover of wage-labor employees, by months, 3 plants, 1947–48.



1.8 percent to 8.7 percent (table 34).

Of the overgraded poultry, 86.1 percent should have been put in grade B. The remaining portion, 13.9 percent, of the overgraded poultry was of grade C quality when dressed. These data were not sufficiently complete to warrant an analysis of seasonal trend. They do, however, show a tendency for overgrading in the late summer and early fall. Overgrading is most likely to occur when the volume is light and the processors who buy on a live quality basis are willing to pay prices beyond those warranted by the quality and dressing yields in order to obtain the volume necessary to utilize the facilities and labor and to meet their market requirements. Overgrading was most likely to occur when prices were high seasonally and therefore at the time when overgrading was most costly to the processor.

Labor

As shown earlier in this report, direct labor cost constitutes an important part of the cost of handling poultry (table 8). At 10 plants it made up from 16.9 to 38.2 percent of the total cost of New York dressing in 1947–48. Not only is it an important cost item, but it appears to be one of the costs most easily reduced.

There are three important aspects of labor which may affect costs. These are (1) labor rates, (2) use of overtime labor, and (3) labor efficiency.

Labor rates and the use of regular and overtime labor have been shown above. Labor rates showed an over-all range from 50 to 85 cents an hour among the 15 plants. This wide variation in so important an item as labor cost contributed in an important degree

to the variation in total costs. Overtime labor constituted an average of 10.4 percent of the total man-hours of direct labor and at some plants it ran much higher. Since overtime labor commands a higher rate of pay than regular labor, labor and total costs normally increase with increased use of overtime labor. On the other hand, the use of trained and experienced employees on an overtime basis may be less costly per unit of output than untrained temporary employees on a regular time and pay basis.

Apparently labor turnover is an important factor in labor cost. High labor turnover may result in lowered plant efficiency by providing an insufficient supply of labor and by requiring the employing of inexperienced and unskilled labor which requires time and practice to train. In this study information was obtained on labor turnover at a number of the dressing plants. It was determined on a percentage basis by calculating the payroll changes in relation to the number of pay checks written weekly. Temporary plant closings were not

considered as employment terminations.

Plant A was most erratic in turnover with a monthly average of 39 percent (table 35). The laborers often preferred to do seasonal farm work or competing industrial work for a brief period because of better hourly pay, more steady work, or change of work pattern. Many school children were hired for brief periods during vacations.

Plant G had a high turnover in June and September because school children were hired. Labor patterns at plant E indicated that little alternative opportunity existed for the labor. Plant H used considerable seasonal labor. There was opportunity for work in other industries. (Figure 10.) Plant J had little turnover except in August when fowl slaughter was heavy and summer employees were going back to school. There was little farm competition for this labor.

The percentage of labor turnover as well as the availability of plant labor should be considered in locating poultry dressing plants in or near the poultry production areas.

Table 35.—Percentage turn-over of wage labor employees of 5 poultry dressing plants, by months, 1947-48¹

Plant	Month												Average
	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	
	Percent												
A-----	14.2	30.5	18.6	33.0	56.2	(2)	35.9	(2)	(2)	50.6	45.1	66.8	39.0
E-----	14.3	16.4	6.5	28.3	28.2	20.5	17.9	16.0	30.8	7.1	12.9	21.8	18.4
G-----	17.9	71.2	28.1	21.9	44.4	13.7	13.2	3.4	21.0	3.7	28.2	11.9	23.2
H-----	64.2	33.9	59.7	25.0	48.3	11.1	33.3	10.5	11.8	4.0	45.8	32.1	31.6
J-----	8.0	7.4	7.1	50.0	10.3	13.3	6.2	9.1	3.8	21.7	13.6	(2)	13.7
Average-----	23.7	31.9	24.0	31.6	37.5	14.6	21.3	9.8	16.8	17.4	29.1	33.2	-----

¹ Payroll changes in terms of the percent of paychecks weekly.

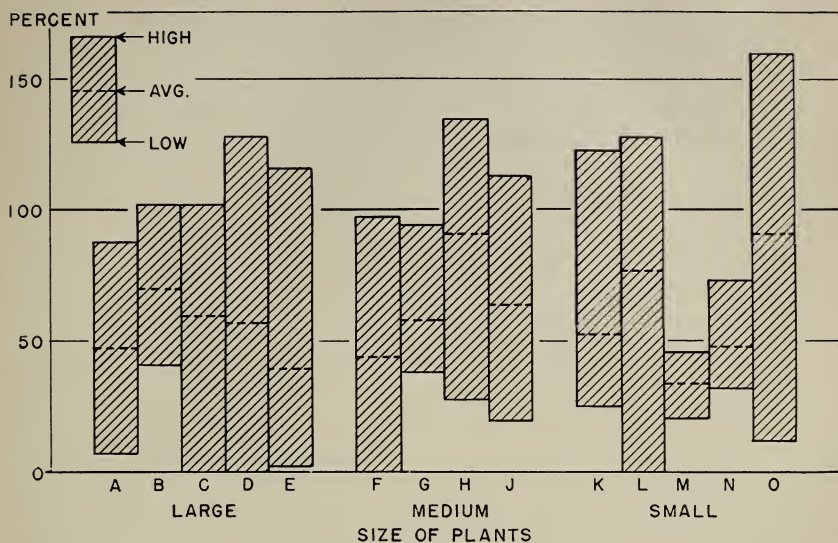
² Data not usable.

Table 36.—Percentage utilization of New York dressing capacities of 14 plants by months, 1947-48

Group and plant	1947						1948						Average	Range (percentage points)
	Months													
	Percent													
	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.		
I—Large:														
A-----	39	55	63	56	53	88	81	57	28	21	10	7	47	81
B-----	102	97	71	58	63	81	90	41	59	76	44	57	70	61
C-----	77	79	64	38	57	76	60	17	0	88	67	102	60	102
D-----	128	87	83	57	41	0	64	0	0	87	51	90	57	128
E-----	3	47	48	48	57	70	116	56	10	13	2	4	40	114
Average-----	70	73	66	51	54	63	82	34	19	57	35	52	55	97
II—Medium:														
F-----	44	43	38	46	59	69	97	57	44	27	8	0	44	97
G-----	44	53	54	65	69	51	80	94	47	49	57	38	58	56
H-----	84	94	111	122	135	123	126	92	71	45	28	65	91	107
J-----	49	54	54	73	101	113	96	79	54	39	20	34	64	93
Average-----	55	61	64	74	91	89	100	81	54	40	28	34	64	88
III—Small:														
K-----	49	32	35	48	45	69	122	75	39	43	38	25	52	97
L-----	77	102	83	89	94	93	128	89	86	61	25	0	77	128
M-----	(1)	(1)	(1)	40	39	25	46	44	21	25	27	43	34	25
N-----	32	44	45	43	73	56	42	38	46	51	41	61	48	41
O-----	(1)	12	93	101	76	113	121	104	57	160	57	107	91	160
Average-----	53	48	64	64	65	71	92	70	50	68	38	47	60	80
Average, 14 plants-----	61	61	65	63	69	73	91	60	40	56	34	45	60	89

¹ Not included in averages.

Figure 11.—Averages and ranges of monthly utilization of 14 plants, in percentages of capacities, 1947-43.



Plant Utilization

The general overhead cost is important in the cost of handling poultry. At 10 plants the general and administrative overhead averaged more than 1 cent per pound of New York dressed poultry (table 8) and constituted from 6.4 to 19.6 percent of the New York dressing cost (table 10). Since total overhead costs vary little or none according to the volume of product handled, it is important to utilize the items which make up fixed costs as much as possible. In the case of a poultry dressing plant this in essence means high plant utilization since it follows that other overhead item utilization follows closely that of the dressing plant as such.

The percentage of plant utilization was determined on a monthly basis by calculating the actual New York dressed output as a percentage

of the New York dressing capacity (table 1).

The over-all average utilization of 14 plants was 60 percent of New York dressing capacity (table 36). Plant I was omitted because of incomplete data. The range for the year was from 34 percent at plant M to 91 percent at plants H and O. While plant O averaged 91 percent for the year, it had a monthly variation from 12 to 160 percent. The average range between the low and high yearly utilization percentages was 89 percentage points. (Figure 11.)

An analysis of the percentage of plant utilization by size of plant shows somewhat higher percentages for the medium and small-sized plants (table 36). The large plants showed greater fluctuation in the monthly rate of capacity used—97 versus 88 and 80 percentage points.

Seasonally, the greatest average

monthly rate of utilization for all plants was 91 percent—during turkey marketing in November. The lowest average use for all the plants was 34 percent, in March. The other months varied from 40 percent in January to 73 percent in October.

There were 22 plant-months out

of 164 in which operations of the plants concerned were at 25 percent or less of capacity. There were 20 plant-months in which plants concerned ran higher than 100 percent of rated capacity. Individual plants varied from zero at closed plants to 160 percent of capacity at plant O in February.

Appendix

Table A.—Estimated direct labor requirements for New York dressing and packing 400 birds an hour and cost at wage rates indicated, 1948¹

Job	Number of employees		Job hours ²	Wage rate ³ per hour	Wage cost
	Men	Women			
Hanging-----	1		8	\$0. 70	\$5. 60
Killing-----	1½		4	. 75	3. 00
Scalding (automatic)-----					
Wing and tail feather removal-----	1½		4	. 70	2. 80
Roughing (automatic)-----					
Buffing (drum)-----	2		16	. 70	11. 20
Pinning-----		8	64	. 60	38. 40
Singing (automatic)-----					
Cleaning crops and vents-----		1	8	. 60	4. 80
Taking off line, sorting, hanging-----					
Handling, ice vats, etc-----		1	8	. 60	4. 80
Handling poultry from vats-----	1		8	. 70	5. 60
Weighing, packing-----		2	16	. 60	9. 60
Clean up and maintenance operations-----	1		8	. 70	5. 60
Supervision, inspection (foreman)-----	1		8	1. 00	8. 00
Total-----	7	12	152		⁴ 99. 40

¹ Number of employees will vary depending upon plant layout, equipment used, type of scald, type of birds, quality of work, type of cooling, type of pack, and other factors. The number of employees given here is based on observations at a number of plants which New York dress about 400 birds an hour.

² Assuming two 15-minute rest periods during an 8-hour day, leaving 7½ hours actual working time.

³ These wage rates were considered representative at the time of the study. After Jan. 23, 1950, the rates were generally higher.

⁴ On the basis of 3,000 three-pound birds a day (400×7½), the wage cost would be 3.3 cents a bird or 1.1 cents a pound live basis.

Table B.—Estimated direct labor requirements for eviscerating 420 New York dressed birds an hour and cost at wage rates, indicated, 1948 ¹

Job	Number of employees		Job hours ²	Wage rate ³ per hour	Wage cost
	Men	Women			
Hanging on line.....	1		8	\$0. 70	\$5. 60
Pinning.....		2	16	. 60	9. 60
Removing oil sacs and fastening head.....		1	8	. 60	4. 80
Splitting neck and loosening neck skin.....		1	8	. 60	4. 80
Pulling crops and windpipes.....		1	8	. 60	4. 80
Cutting around vent.....		1	8	. 60	4. 80
Pulling viscera.....		1	8	. 60	4. 80
Removing lungs and kidneys.....		2	16	. 60	9. 60
Removing head and necks.....		1	8	. 60	4. 80
Removing and trimming gizzards, livers, and hearts.....		1	8	. 60	4. 80
Cleaning gizzards.....		2	16	. 60	9. 60
Washing gizzards, livers, hearts.....		1	8	. 60	4. 80
Washing body cavity.....		1	8	. 60	4. 80
Wrapping giblets.....		1	8	. 60	4. 80
Cutting off feet and removing from line.....	1		8	. 70	5. 60
Clean-up, maintenance, and miscel- laneous jobs.....	1		8	. 70	5. 60
Supervision and inspection (foreman).....	1		8	1. 00	8. 00
Total.....	4	16	160		⁴ 101. 60

¹ Number of employees will vary depending upon plant layout, equipment used, type of bird, cleanliness of bird, quality of work, amount of eviscerating done on line, order and combination of different jobs, techniques used, and other factors. The number of employees given here is based on observations at a number of plants which eviscerate about 420 New York dressed birds an hour.

² Assuming two 15-minute rest periods during an 8-hour day, leaving 7½ hours actual working time.

³ These wage rates were considered representative at the time of the study. After Jan. 23, 1950, they were generally higher.

⁴ On the basis of 3,150—2.75-pound New York dressed birds a day ($420 \times 7\frac{1}{2}$), the wage cost would be 3.2 cents a bird or 1.17 cents per pound New York dressed basis.

Table C.—Estimated direct labor requirements for cutting up and cartoning 420 eviscerated birds an hour and cost at wage rates indicated, 1948¹

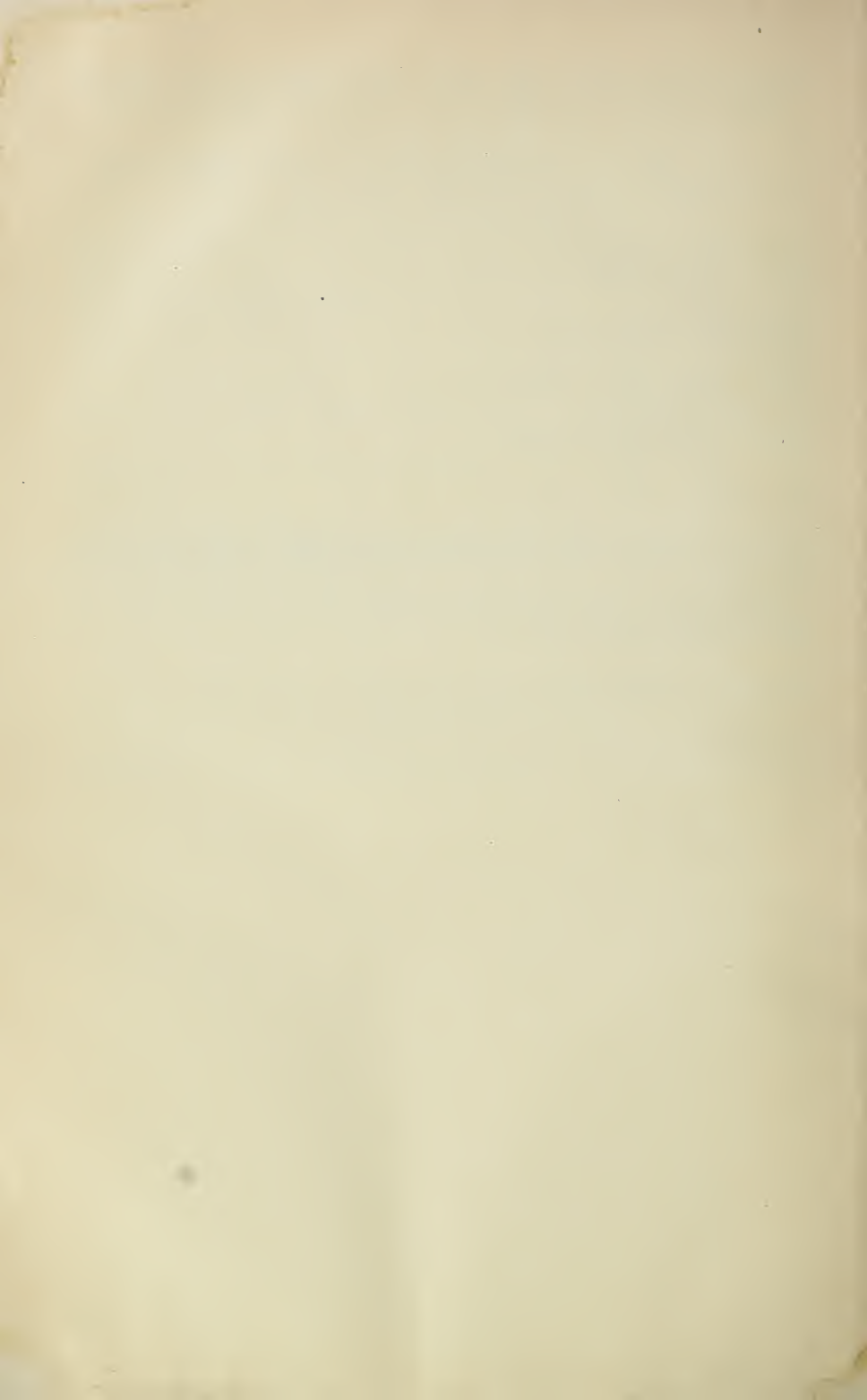
Job	Number of employees		Job hours ²	Wage rate, per hour ³	Wage cost
	Men	Women			
Loading trays-----	1		8	\$0.70	\$5.60
Cutting off legs and wings-----		3	24	.60	14.40
Sawing breasts and backs-----		1	8	.60	4.80
Making cartons-----		1	8	.60	4.80
Packing in cartons-----		4	32	.60	19.20
Weighing and closing cartons-----		1	8	.60	4.80
Stencilling and packing in shipping boxes-----		1	8	.60	4.80
Making shipping boxes, marking, moving boxes, etc-----	1		8	.70	5.60
Clean-up, maintenance, etc-----	1		8	.70	5.60
Supervision, inspection, etc. (foreman)-----	1		8	1.25	10.00
Total-----	4	11	120		⁴ 79.60

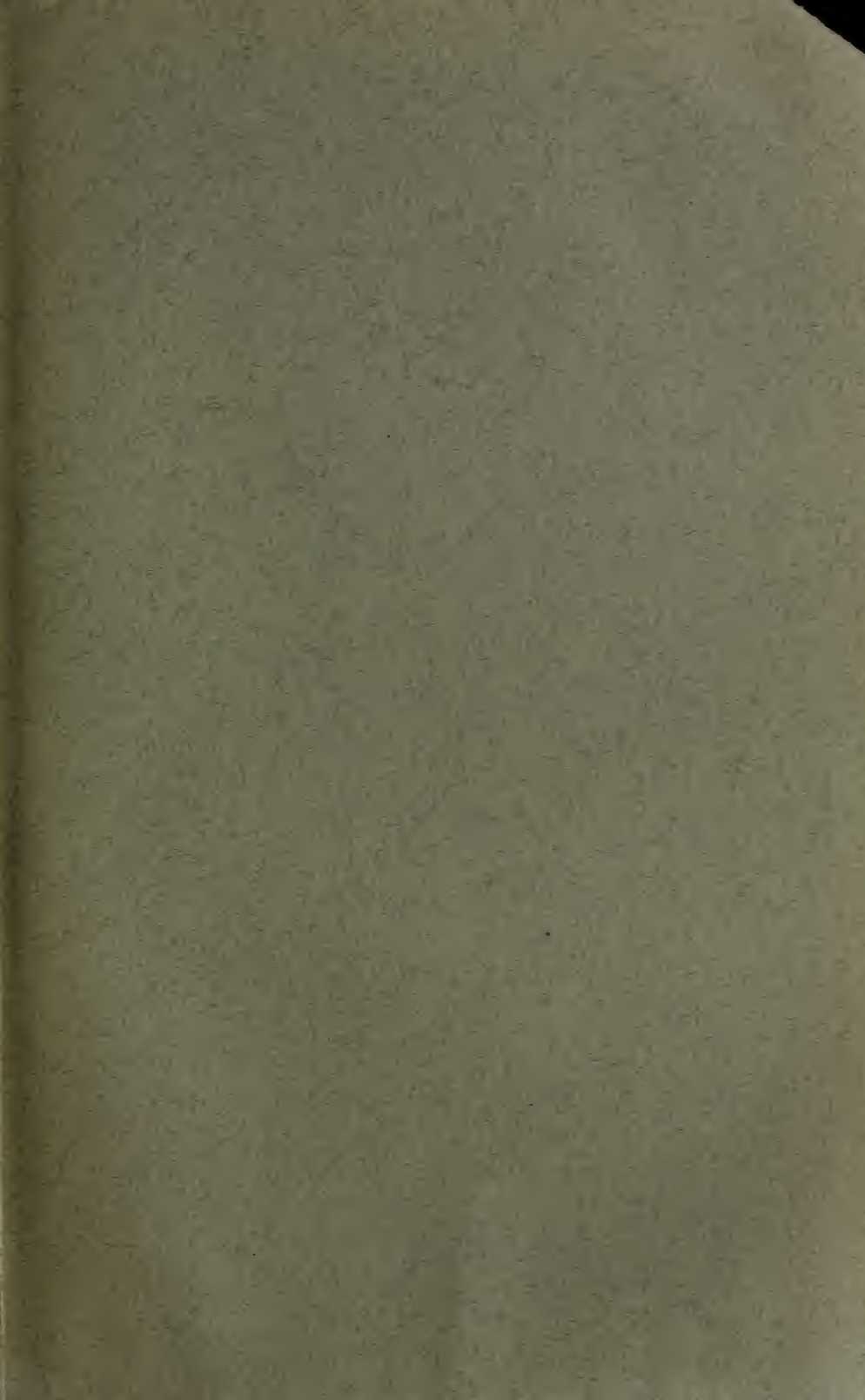
¹ Number of employees will vary depending upon plant layout, equipment used, type of birds, type of pack, order and combination of different jobs, technique used, and other factors. The number of employees given here is based on observations at a number of plants which cut up and carton about 420 eviscerated birds an hour.

² Assuming two 15 minute rest periods during an 8 hour day, leaving 7½ hours actual working time.

³ These wage rates were considered representative at the time of the study. After Jan. 23, 1950, they were generally higher.

⁴ On the basis of 3,150 (420×7½) 2.15 pound eviscerated birds a day, the wage cost would be 2.5 cents a bird or 1.18 cents per pound, eviscerated basis.





Other Publications Available

Agricultural Cooperation in the United States, Bulletin 54, *Ward W. Fetrow and R. H. Elsworth.*

Legal Phases of Cooperative Associations, Bulletin 50, *L. S. Hulbert.*

Story of Farmers' Cooperatives, FCS Educational Circular 1, *R. H. Elsworth.*

Using Your Poultry and Egg Co-op, Circular E-13, *John J. Scanlan.*

Cooperative Marketing of Eggs and Poultry in Ohio, Bulletin 59, *Harry E. Ratcliffe.*

Cooperative Egg and Poultry Auction Associations, Bulletin 37, *John J. Scanlan and Roy W. Lennartson.*

Costs of Handling Eggs by Selected Cooperatives in the North Central States, Miscellaneous Report 162, *Harry E. Ratcliffe, Henry W. Bradford, and John J. Scanlan.*

Costs and Labor Efficiency of Specialized Egg Marketing Cooperatives in the Northeast, Miscellaneous Report 158, *Henry W. Bradford, Harry E. Ratcliffe, and John J. Scanlan.*

Some Effects of Marketing Eggs in Ohio According to Federal Grades, Miscellaneous Report 153, *Harry E. Ratcliffe.*

Plans and Operations of Farm and Small Commercial Poultry Dressing Plants, Miscellaneous Report 147, *George A. Amacker and John J. Scanlan.*

Layout and Operations of Cooperative Poultry Dressing Plants, Miscellaneous Report 101, *W. M. Hurst.*

Copies of these publications may be obtained upon request, while a supply is available, from the

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